2012 - JCR Evaluation Form

SPECIES: Mule Deer | PERIOD: 6/1/2012 - 5/31/2013

HERD: MD423 - UINTA

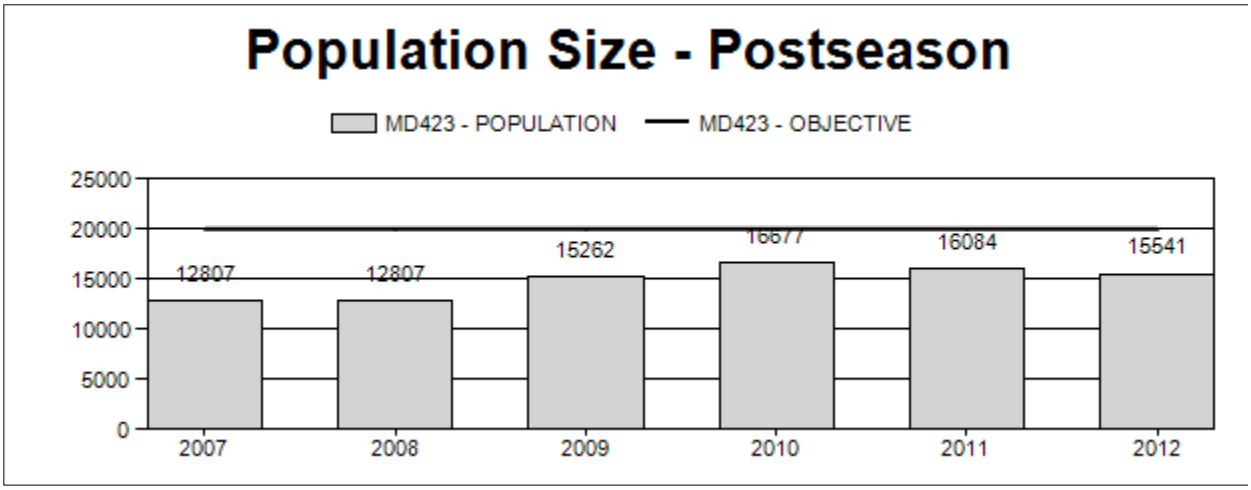
HUNT AREAS: 132-133, 168 | PREPARED BY: JEFF SHORT

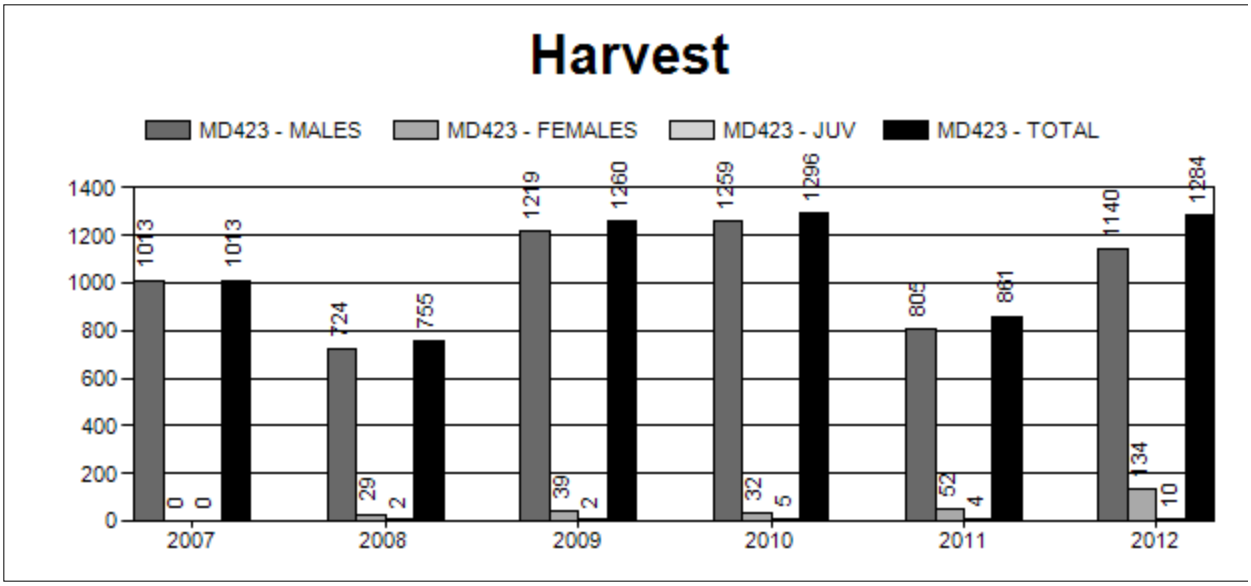
	2007 - 2011 Average	2012	2013 Proposed
Population:	14,727	15,541	15,899
Harvest:	1,037	1,284	1,108
Hunters:	2,341	2,611	2,600
Hunter Success:	44%	49%	43%
Active Licenses:	2,364	2,631	2,650
Active License Percent:	44%	49%	42%
Recreation Days:	10,717	12,299	13,000
Days Per Animal:	10.3	9.6	11.7
Males per 100 Females	27	26	
Juveniles per 100 Females	60	62	

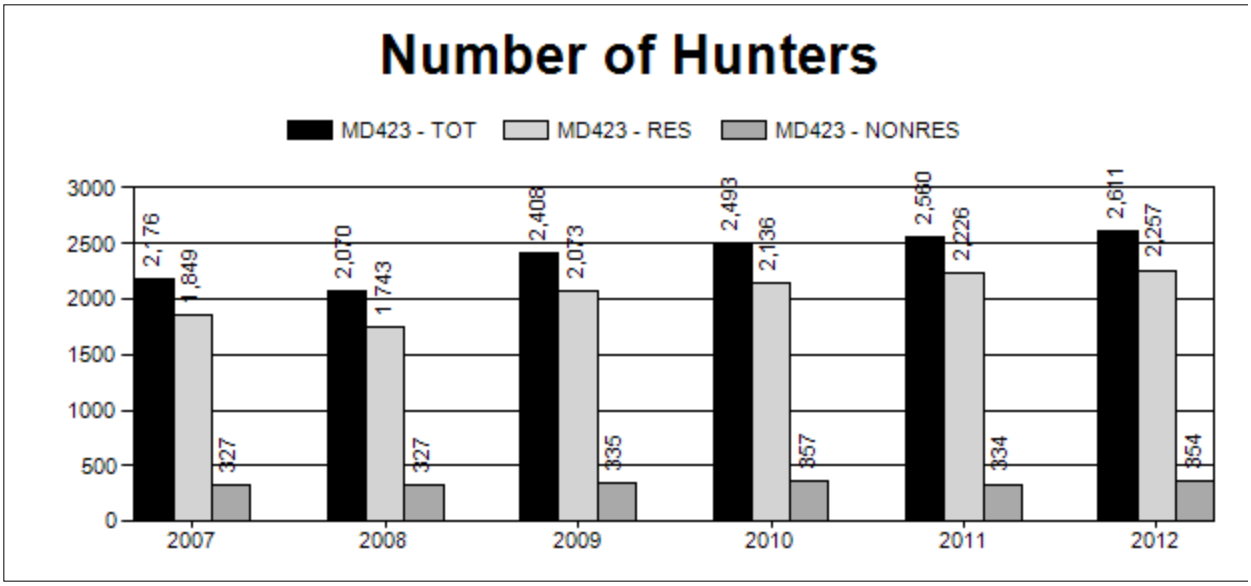
Population Objective:	20,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-22.3%
Number of years population has been + or - objective in recent trend:	19
Model Date:	2/18/2013

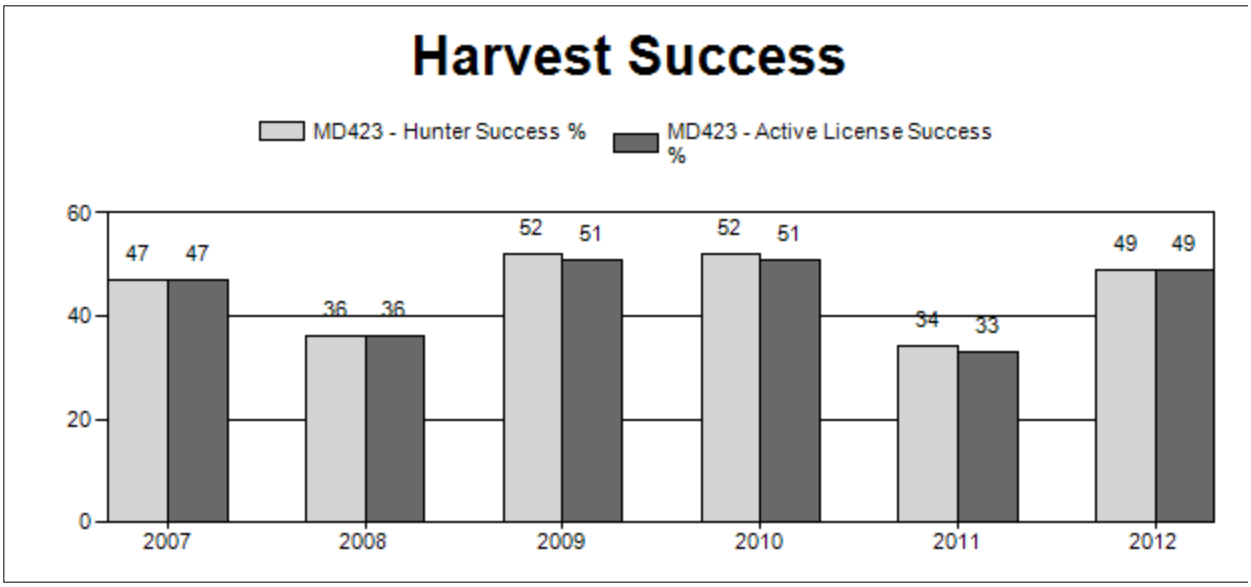
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

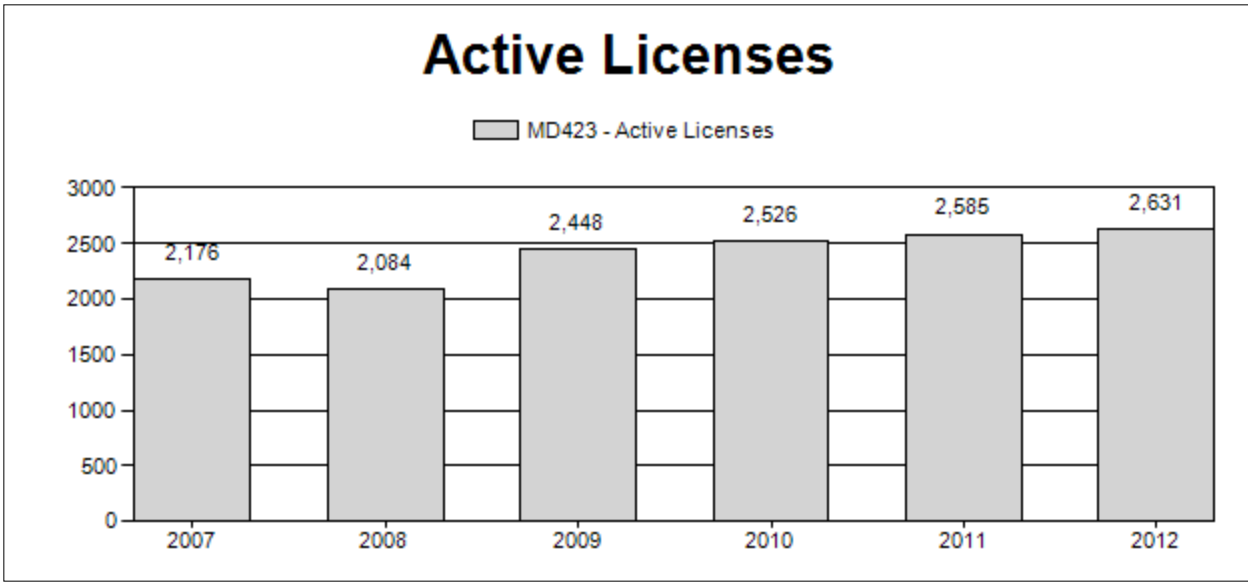
	JCR Year	Proposed
Females ≥ 1 year old:	1.8%	1.3%
Males ≥ 1 year old:	36.9%	31.4%
Juveniles (< 1 year old):	0.19%	0.16%
Total:	7.61%	6.47%
Proposed change in post-season population:	-3.37%	2.3%

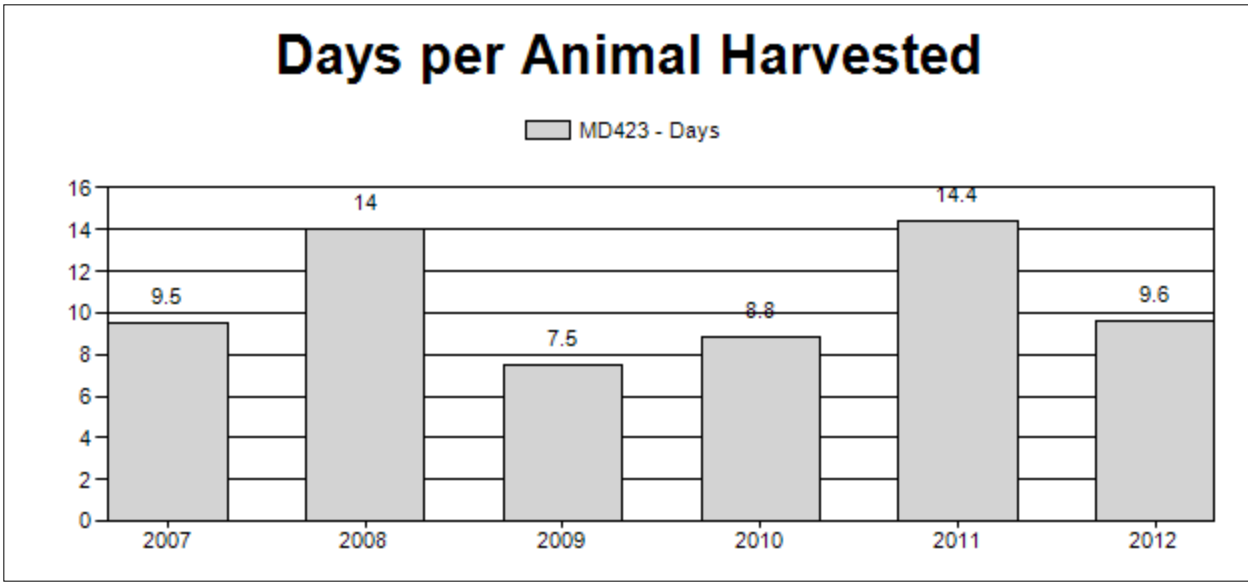


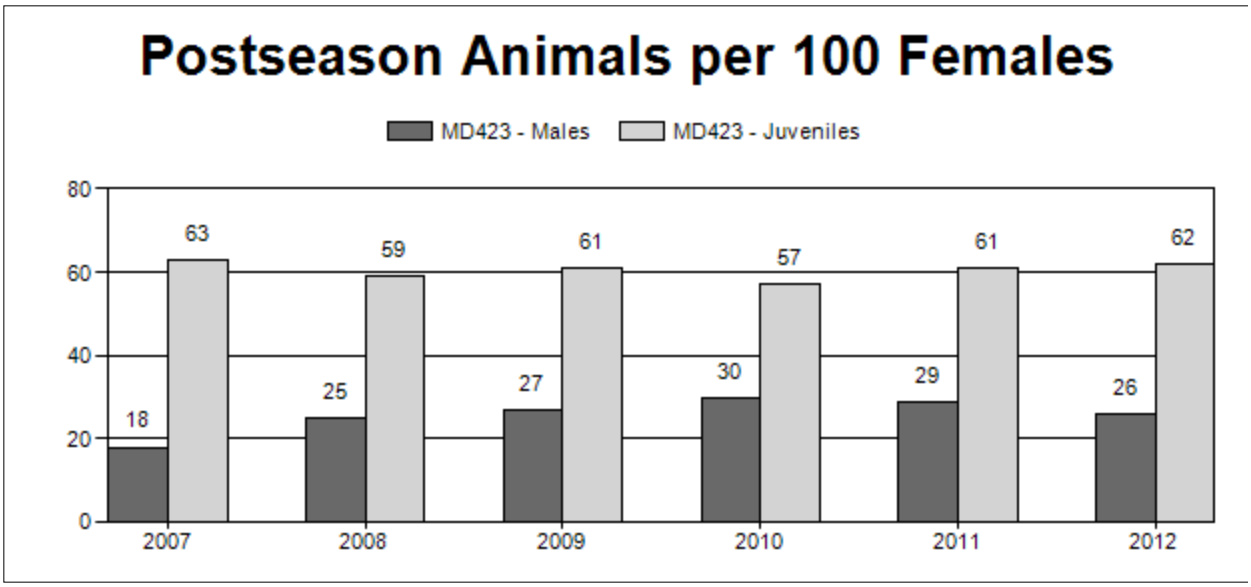

Harvest
MD423 - MALES
MD423 - FEMALES
MD423 - JUV
MD423 - TOTAL
1400
1200
1000
800
600
400
200
0
1013
0
0
1013
724
29
2
755
1219
39
2
1260
1259
32
5
1296
805
52
4
861
1140
134
10
1284
2007
2008
2009
2010
2011
2012


Number of Hunters
MD423 - TOT
MD423 - RES
MD423 - NONRES
3000
2500
2000
1500
1000
500
0
2,176
1,849
327
2,070
1743
327
2,408
2,073
335
2,493
2,136
357
2,560
2,226
334
2,611
2,257
354
2007
2008
2009
2010
2011
2012


Harvest Success
MD423 - Hunter Success %
MD423 - Active License Success %
60
40
20
0
47
47
36
36
52
51
52
51
34
33
49
49
2007
2008
2009
2010
2011
2012


Active Licenses
MD423 - Active Licenses
3000
2500
2000
1500
1000
500
0
2,176
2,084
2,448
2,526
2,585
2,631
2007
2008
2009
2010
2011
2012


Days per Animal Harvested
MD423 - Days
16
14
12
10
8
6
4
2
0
9.5
14
7.5
8.8
14.4
9.6
2007
2008
2009
2010
2011
2012


Postseason Animals per 100 Females
MD423 - Males
MD423 - Juveniles
80
60
40
20
0
18
63
25
59
27
61
30
57
29
61
26
62
2007
2008
2009
2010
2011
2012

2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD423 - UINTA

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	12,807	69	80	149	10%	829	55%	520	35%	1,498	0	8	10	18	± 2	63	± 4	53
2008	12,807	84	158	242	14%	957	54%	566	32%	1,765	0	9	17	25	± 2	59	± 4	47
2009	15,262	115	206	321	14%	1,190	53%	725	32%	2,236	0	10	17	27	± 2	61	± 3	48
2010	16,677	261	271	532	16%	1,767	53%	1,011	31%	3,310	0	15	15	30	± 2	57	± 3	44
2011	16,084	93	313	406	15%	1,393	53%	846	32%	2,645	0	7	22	29	± 2	61	± 3	47
2012	15,541	119	311	430	14%	1,642	53%	1,025	33%	3,097	0	7	19	26	± 2	62	± 3	49

2013 HUNTING SEASONS

SPECIES : Mule Deer

HERD UNIT : Uinta (423)
HUNT AREAS: 132, 133, 168

Hunt Area	Type	Dates of Seasons Opens	Closes	Limited Quota	Limitations
132		Oct. 1	Oct. 11		General license; antlered deer 3-point or more on either antler
		Oct. 1	Oct. 14		General youth license; any deer
133		Oct. 1	Oct. 11		General license; antlered deer
		Oct. 1	Oct. 14		General youth license; any deer
168		Oct. 1	Oct. 11		General license; antlered deer
		Oct. 1	Oct. 14		General youth license; any deer
132, 133, 168	7	Oct. 1	Oct. 14	50	Limited quota licenses; doe or fawn valid on irrigated land
132, 133, 168	Archery	Sept. 1	Sept. 30		Refer to Section 3 of this chapter

Region K Nonresident Quota: 500

Hunt Area	License Type	Quota change from 2012
Herd Unit Total		

Management Evaluation
Current Postseason Population Management Objective: 20,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~15,541
2013 Proposed Postseason Population Estimate: ~15,899

Herd Unit Issues
Energy development on crucial deer habitat is a looming issue for this herd. Extensive development has occurred over their range. Xeric environments and limited high quality

fawning habitats greatly affect deer productivity in several areas in this herd. This limited fawning habitat will affect the ability of fawns to evade predation by coyotes. Winter range condition is a major concern, much of which is in checkerboard ownership, limiting treatment options. Winter severity every three to five years is a major limiting factor for this deer herd. This is especially true in the western part of the herd around Evanston, Fort Bridger and Leroy. The eastern portion of the herd around Cedar Mountain experiences a rain shadow effect and has not been affected by severe winters in the last 10 years.

Highway mortality and impediment of migration is a significant issue in this herd unit. Mule deer have to cross highways to migrate to crucial winter ranges in several locations. In the Leroy area mule deer are crossing Interstate 80 to get to and from important winter ranges. Deer fencing is present in most of this area but deer crossing structures are limited and the fence is ageing and showing some signs of wear. Deer must cross Highway 414 in several areas between Mountain View and McKinnon to migrate to summer and winter ranges. Mortalities are common in those areas. The most significant area of issue is Wyoming Highway 189 between I-80 and Kemmerer. A large segment of the herd must cross this highway to get to winter ranges. Mortalities are very common due to heavy traffic on the roadway, and deer losses are exceeding 200 during some winters. This issue is likely to become much larger due to the construction of a new coal mine in this section of the road which will increase traffic considerably. Construction of this mine is currently on hold due to economics, but infrastructure is in place to begin operations.

Weather
Weather during 2012 and into 2013 was extremely dry and warmer than normal. The winters of 2011-2012 and 2012-2013 were mild with low snowpack resulting in good over winter survival. However, the dry spring and summer of 2012 negatively impacted summer and winter range forage production. Conditions were better at higher elevations but deer distribution was greatly affected.

Habitat
Habitat data collection has been inconsistently collected in this herd unit and has been absent in the recent past.

Field Data
The winter of 2010/11 was very severe in some areas and the population in the western part of the herd unit declined significantly due to it. Mortality surveys at the LeRoy winter range complex showed significant fawn and adult doe mortality. However, conditions were much milder in the eastern part of the herd unit. A radio collar study in that area showed a 92% survival rate from December of 2010 to December of 2011, a very high survival rate for mule deer does.

Classification data is collected yearly by helicopter in Hunt Areas 168, 132 and 133. Sample sizes are very good with over 1,400 deer classified annually. Post season buck ratios in 2012 were good with 26 bucks per 100 does. It is interesting to note that although yearling buck ratios were very low at 7:100, adult buck:doe ratios were high at 19:100.

Fawn:doe ratios in the herd unit as a whole were within the average for this herd over the last six years at 62:100. This is below where we would like to see them. The low fawn recruitment in this population is of very high concern. It may be due to several factors including winter range habitat condition, summer range habitat condition, elk competition on summer habitats, neonate predation on summer ranges, aspen stand condition on summer habitats, limited areas of

effective parturition habitats and doe age structure. We would like to improve future fawn:doe ratios through habitat improvement and predator manipulation to promote growth of this herd.

Fawn ratios in Hunt Area 132 are concerning with an observed 2012 postseason ratio of 54:100. This ratio is too low to allow for population growth, or maintenance. Hunt Area 132 consists of xeric habitats with low productivity potential when compared to the rest of the herd unit. It also has small, patchy areas of suitable fawning habitat, making newborn fawns more susceptible to predation, particularly from coyotes.

Harvest Data

The hunter harvest from seasons recently offered for mule deer do not impact overall population size, recruitment or productivity, and only influence buck:doe ratios, which are at the high end of recreational management criteria. Doe harvest is only allowed by youth hunters and in a very limited Type 7 season on irrigated lands. Overall female harvest is negligible. Harvest has fluctuated greatly over the past five years due to changes in population from winter severity and fluctuations in weather conditions during the hunting season.

Population

The Uinta mule deer herd was not modeled successfully for a number of years due to unknown amount of interchange with neighboring Utah, and reduced flight budgets preventing annual aerial surveys. We have begun scheduling this herd unit on an annual basis for survey dollars, and radio collar information suggests interchange is less than we previously thought (but does still occur).

We feel somewhat confident in this model since it is consistent with field information and seems reasonable. However, some caution should be used since this an interstate population with some interchange across state boundaries. Recent radio collar data documents over 12% interchange. This is far lower than we once expected. Continued radio collar work would help further determine the extent of these movements. The TSJ,CA model was selected due to the low Relative AICc score and its good fit with the data. The TSJ,CA model fits very well with mule deer population dynamics in this type of system.

In 2012 the Department switched from POP-II models to an Excel spreadsheet model. Since these are new models they are going to be under development and subject to extensive refining. They will likely change over time with new data.

The model predicts a post-season population of around 15,541 mule deer in 2013. This is a decrease in the population from 2010 levels. This reduction is substantiated by hunter comments, winter mortality surveys and anecdotal field observations. This supporting information gives us some confidence in model results. However, the trend modeled from 2010 levels (16,667) is not very realistic considering the severity of winter mortality observed on the western winter ranges where the vast majority of the deer herd winters. The trend since that period should have shown a more precipitous decline.

Management Summary

The 2013 season in hunt areas 132, 133 and 168 will allow for 11 days of general antlered deer hunting opportunity. This is a reduction of three days from the standard 14 day season we strive to offer. That reduction cuts the second weekend off of the hunt and ends it on a Friday. In consideration of youth hunting opportunity we leave a youth season open through that second weekend. This will allow youth to hunt two weekends.

Due solely to its popularity with local sportsmen, an antler point restriction will be maintained in hunt area 132. Additionally, a handful of doe-fawn licenses will be maintained in the herd unit to address the number of deer that are living year round on irrigated fields and give landowners an opportunity to have some harvested. The population objective and management strategy were last revised in 1997.

INPUT	
Species:	Deer
Biologist:	Jeff Short
Herd Unit & No.:	Uinta MD423
Model date:	02/18/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report
CJ,CA	Constant Juvenile & Adult Survival	88	97	☐ CJ,CA Model
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	85	105	☐ SCJ,SCA Mo
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	0	119	☑ TSJ,CA Model

Population Estimates from Top Model

Year	Posthunt Population Est. Field Est	Field SE	Trend Count	Predicted Prehunt Population Juveniles	Total Males	Females	Total	Predicted Posthunt Population Juveniles	Total Males	Females	Total	Objective
1993				3499	2411	8759	14669	3459	1681	8149	13288	20000
1994				5767	2256	7614	15637	5767	1598	7614	14979	20000
1995				5251	2851	7835	15938	5251	2089	7835	15175	20000
1996				6439	3373	8134	17947	6439	2309	8134	16882	20000
1997				5212	2919	7746	15877	5202	2116	7594	14911	20000
1998				5880	2703	7241	15823	5880	1904	7241	15024	20000
1999				5474	2822	7244	15540	5474	1595	7244	14313	20000
2000				5174	3578	8259	17011	5133	2150	7999	15283	20000
2001				5209	2980	7825	16014	5188	1818	7645	14651	20000
2002				4713	2984	7811	15508	4660	1837	7425	13922	20000
2003				4778	3118	7747	15643	4744	1997	7550	14291	20000
2004				5587	3445	8046	17079	5544	2384	7809	15738	20000
2005				5647	3070	7565	16282	5647	2025	7565	15237	20000
2006				4818	3083	7673	15575	4818	2031	7673	14522	20000
2007				4441	2405	7080	13926	4441	1285	7080	12807	20000
2008				4409	2683	7484	14576	4407	1886	7452	13745	20000
2009				4946	3546	8157	16648	4943	2205	8114	15262	20000
2010				5104	4051	8947	18103	5099	2667	8912	16677	20000
2011				5149	3354	8528	17031	5145	2469	8471	16084	20000
2012				5155	3417	8390	16961	5144	2157	8240	15541	20000
2013				5070	3504	8543	17117	5061	2404	8433	15899	20000

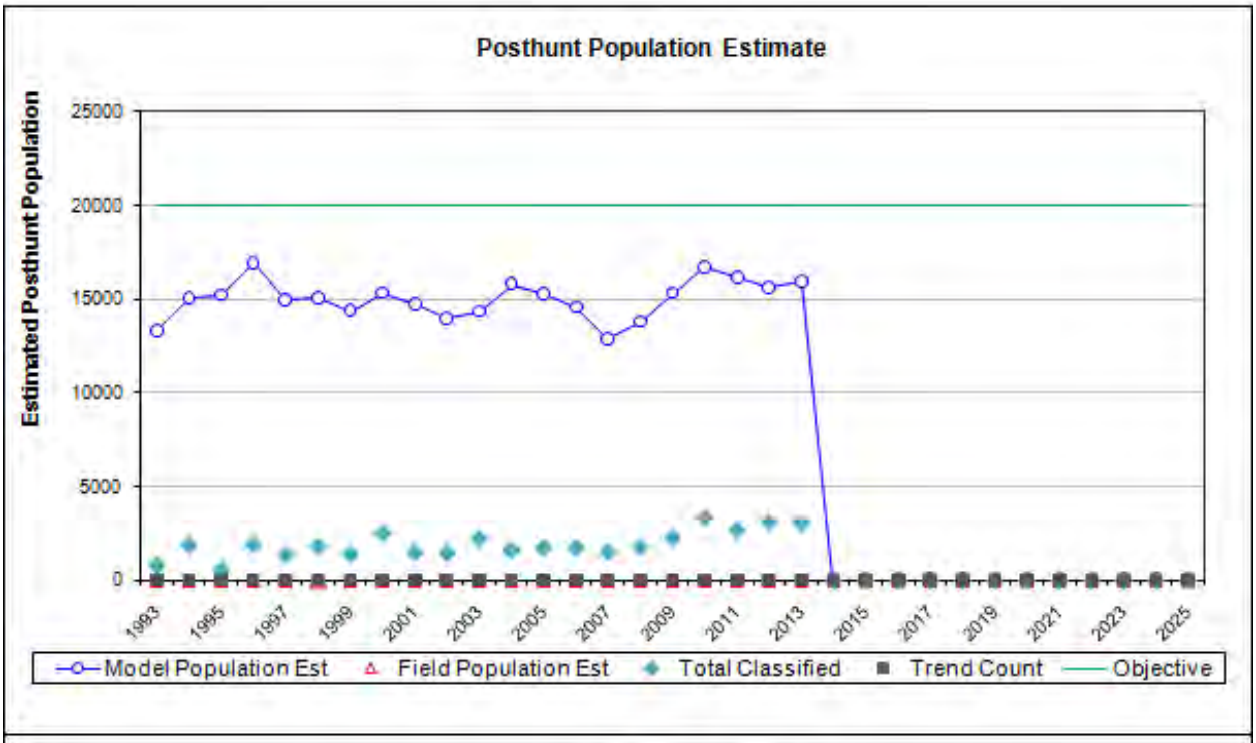
Survival and Initial Population Estimates

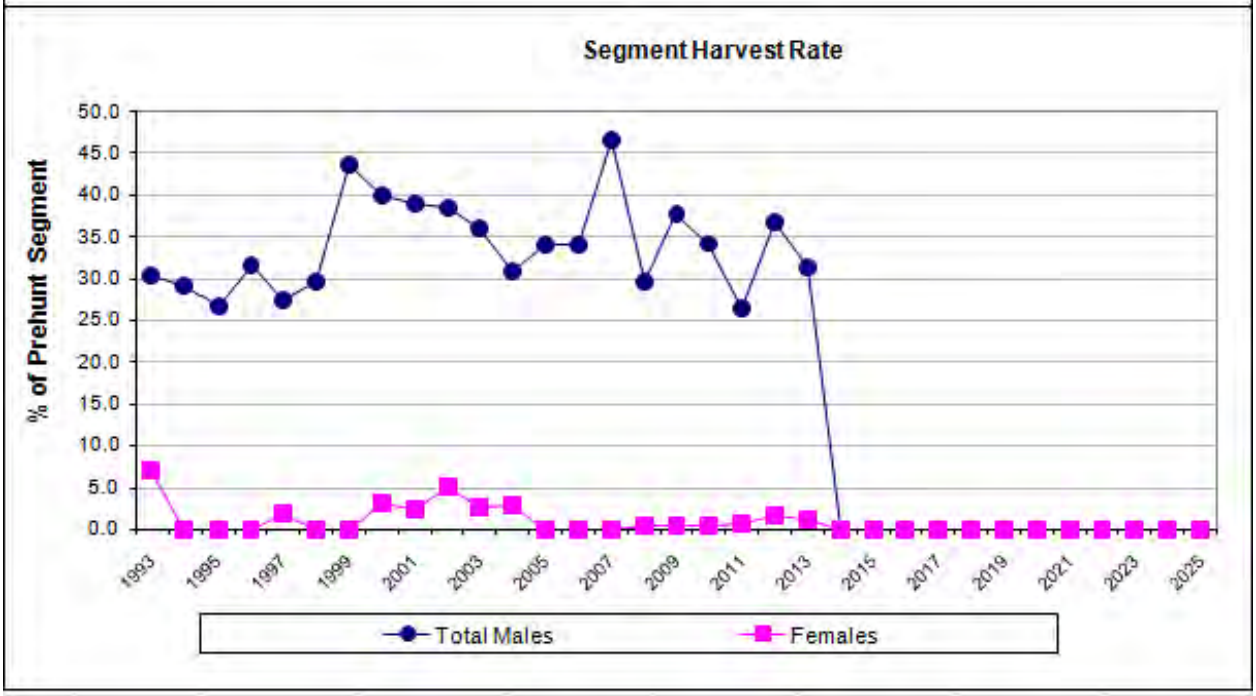
Year	Annual Juvenile Survival Rates Model Est	Field Est	SE	Annual Adult Survival Rates Model Est	Field Est	SE
1993	0.50			0.83		
1994	0.53			0.83		
1995	0.63			0.83		
1996	0.31			0.83		
1997	0.37			0.83		
1998	0.42			0.83		
1999	0.82			0.83		
2000	0.47			0.83		
2001	0.57			0.83		
2002	0.68			0.83		
2003	0.76			0.83		
2004	0.40			0.83		
2005	0.50			0.83		
2006	0.30			0.83		
2007	0.73			0.83		
2008	0.90			0.83		
2009	0.90			0.83		
2010	0.45			0.83		
2011	0.53			0.83		
2012	0.67			0.83		
2013	0.30			0.83		

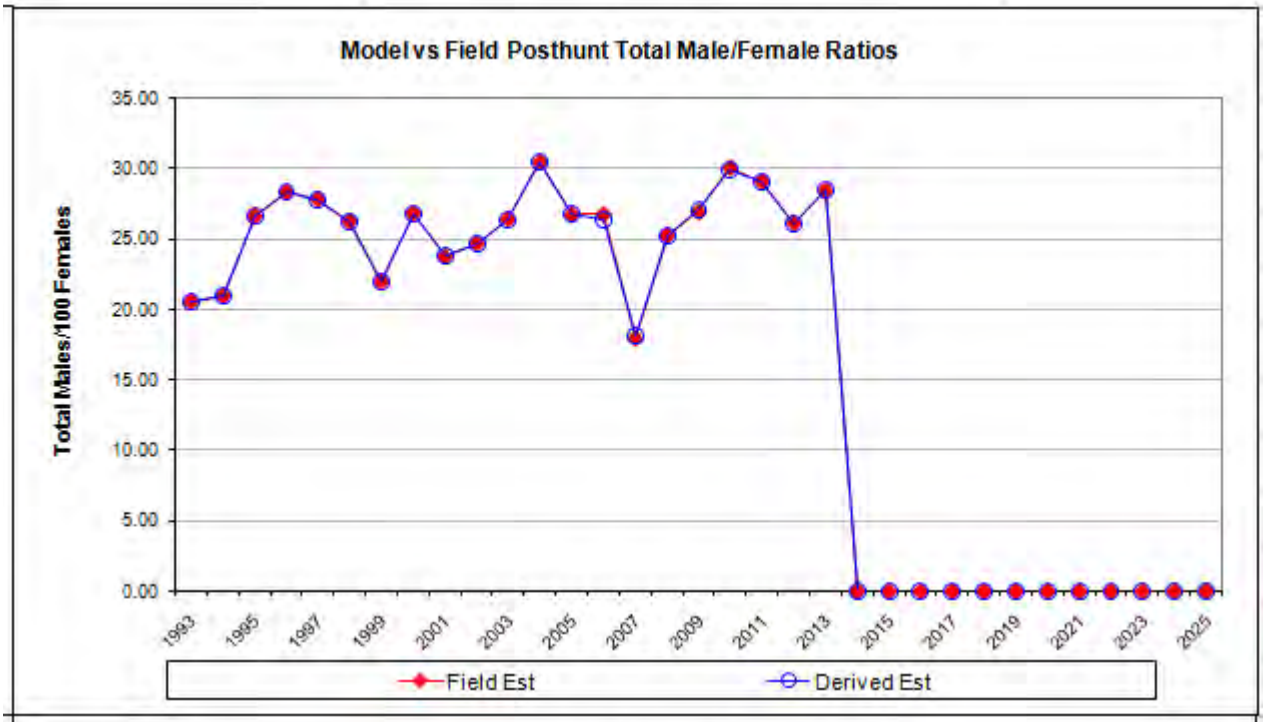
Parameters:	Optim ce
Adult Survival =	0.828
Initial Total Male Pop/10,000 =	0.168
Initial Female Pop/10,000 =	0.815

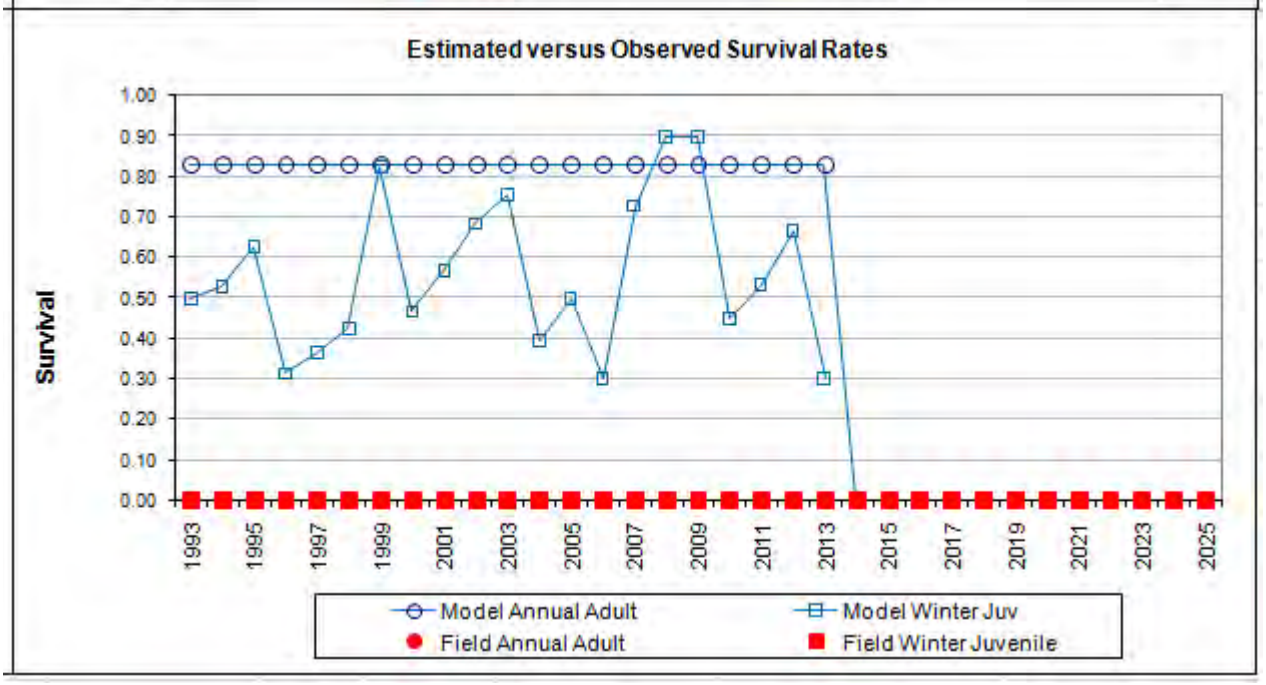
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

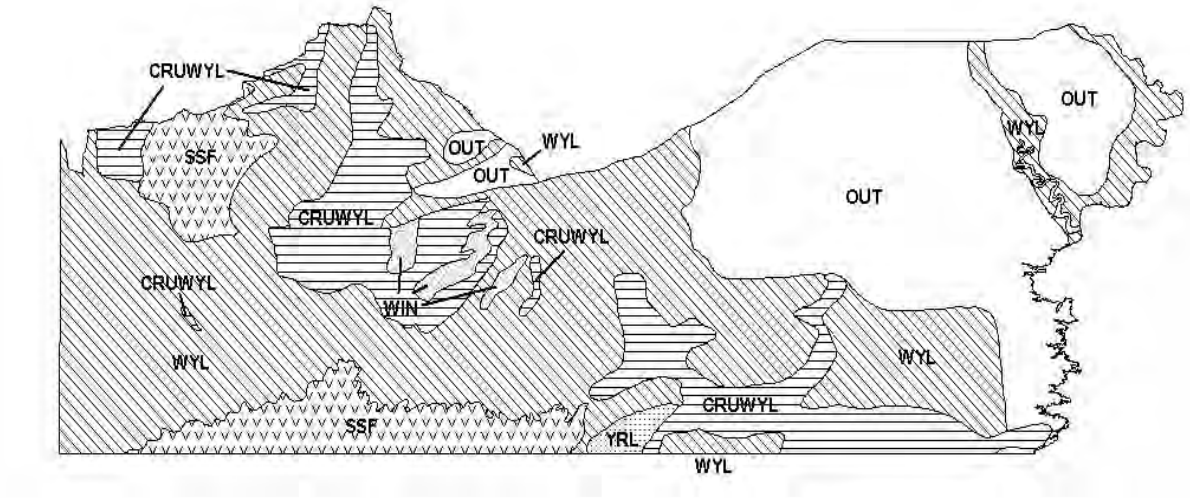
Classification Counts											Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		42.45	3.51	20.63	20.61	2.25	36	664	555	1255	30.3	7.0
1994		75.74	3.75	20.99	20.99	1.64	0	598	0	598	29.2	0.0
1995		67.02	6.27	26.66	26.67	3.44	0	693	0	693	26.7	0.0
1996		79.16	3.97	28.38	28.38	2.01	0	968	0	968	31.6	0.0
1997		68.51	4.09	27.86	27.87	2.27	9	731	139	879	27.5	2.0
1998		81.20	4.12	26.29	26.30	1.96	0	726	0	726	29.6	0.0
1999		75.57	4.34	22.01	22.02	1.95	0	1116	0	1116	43.5	0.0
2000		64.18	2.85	26.88	26.89	1.62	37	1298	236	1571	39.9	3.1
2001		67.87	3.83	23.78	23.78	1.95	19	1056	164	1239	39.0	2.3
2002		62.76	3.63	24.75	24.74	1.99	49	1042	351	1442	38.4	4.9
2003		62.83	2.96	26.45	26.44	1.69	31	1019	179	1229	36.0	2.5
2004		71.00	3.91	30.52	30.52	2.24	39	965	215	1219	30.8	2.9
2005		74.65	3.91	26.77	26.76	2.00	0	950	0	950	34.0	0.0
2006		62.79	3.35	26.47	26.78	1.93	0	957	0	957	34.1	0.0
2007		62.73	3.51	18.16	17.97	1.60	0	1018	0	1018	46.6	0.0
2008		59.14	3.14	25.31	25.29	1.82	2	724	29	755	29.7	0.4
2009		60.92	2.87	27.18	26.97	1.70	2	1219	39	1260	37.8	0.5
2010		57.22	2.26	29.92	30.11	1.49	5	1259	32	1296	34.2	0.4
2011		60.73	2.65	29.14	29.15	1.64	4	805	52	861	26.4	0.7
2012		62.42	2.48	26.18	26.19	1.42	10	1145	136	1291	36.9	1.8
2013		60.02	2.45	28.50	28.49	1.51	8	1000	100	1108	31.4	1.3


Posthunt Population Estimate
Estimated Posthunt Population
25000
20000
15000
10000
5000
0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
Model Population Est
Field Population Est
Total Classified
Trend Count
Objective


Segment Harvest Rate
% of Prehunt Segment
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
Total Males
Females


Model vs Field Posthunt Total Male/Female Ratios
Total Males/100 Females
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
Field Est
Derived Est


Estimated versus Observed Survival Rates
Survival
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
Model Annual Adult
Model Winter Juv
Field Annual Adult
Field Winter Juvenile



Mule Deer (MD423) - Uinta
HA 132, 133, 168
Revised - 3/94

2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD424 - SOUTH ROCK SPRINGS

HUNT AREAS: 101-102

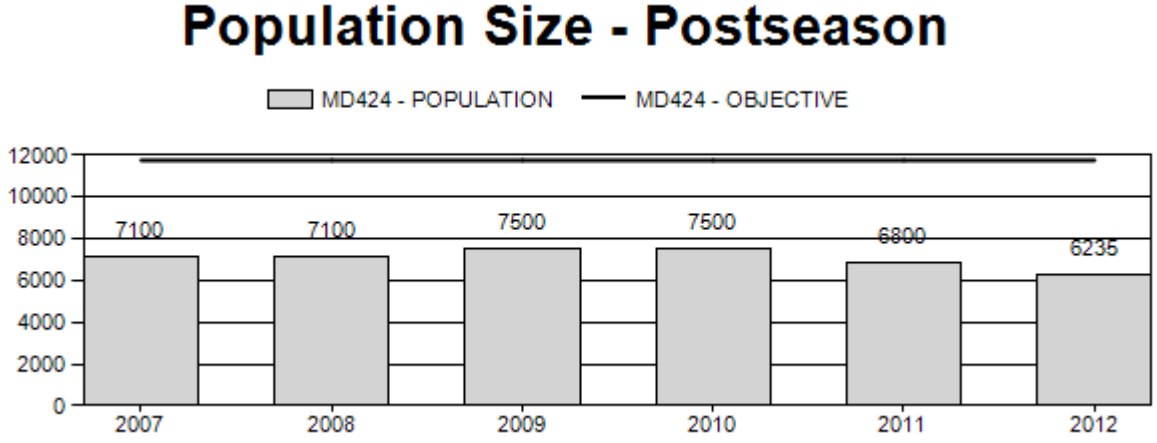
PREPARED BY: PATRICK BURKE

	2007 - 2011 Average	2012	2013 Proposed
Population:	7,200	6,235	6,733
Harvest:	374	362	370
Hunters:	455	437	450
Hunter Success:	82%	83%	82 %
Active Licenses:	455	437	450
Active License Percent:	82%	83%	82 %
Recreation Days:	3,018	3,003	3,000
Days Per Animal:	8.1	8.3	8.1
Males per 100 Females	29	33	
Juveniles per 100 Females	55	60	

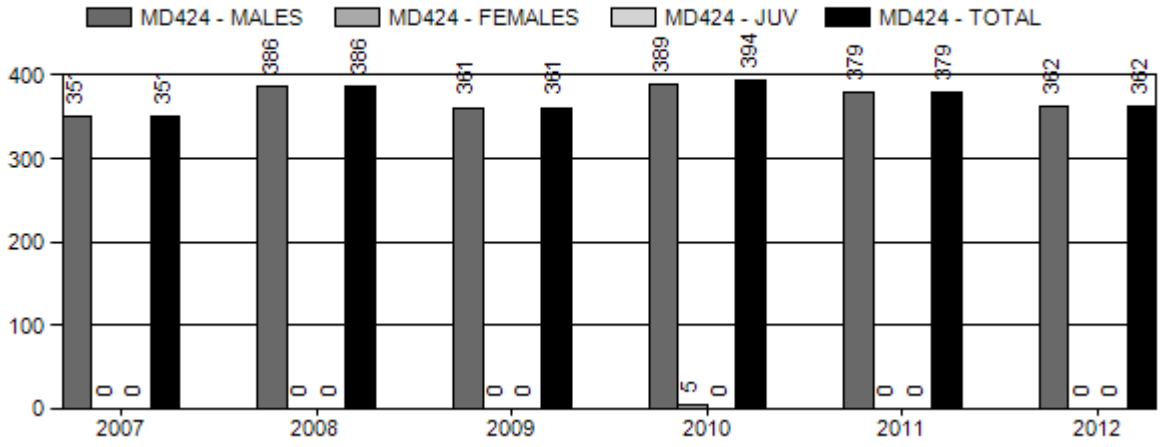
Population Objective:	11,750
Management Strategy:	Special
Percent population is above (+) or below (-) objective:	-46.9%
Number of years population has been + or - objective in recent trend:	20
Model Date:	2/20/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

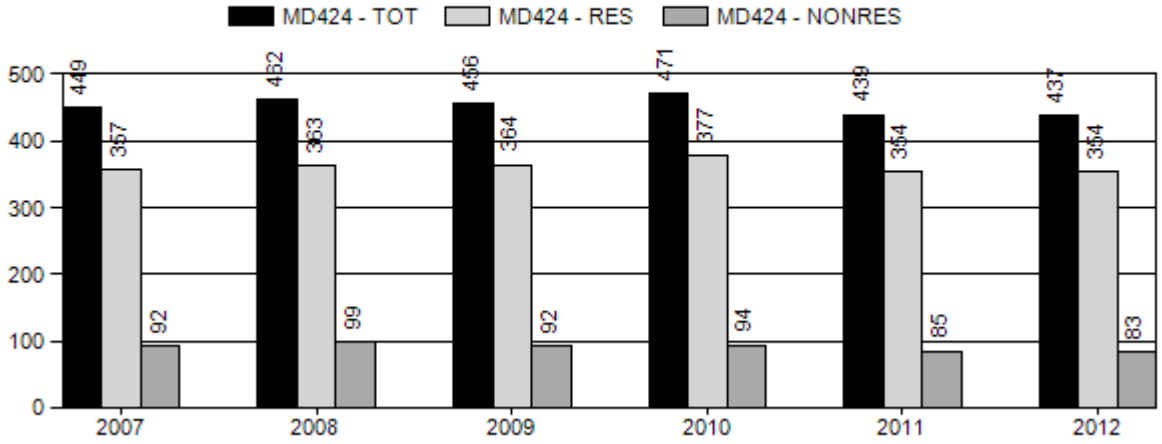
	JCR Year	Proposed
Females ≥ 1 year old:	0%	0%
Males ≥ 1 year old:	23%	25.7%
Juveniles (< 1 year old):	0%	0%
Total:	5%	6.0%
Proposed change in post-season population:	1.4%	-2.7%



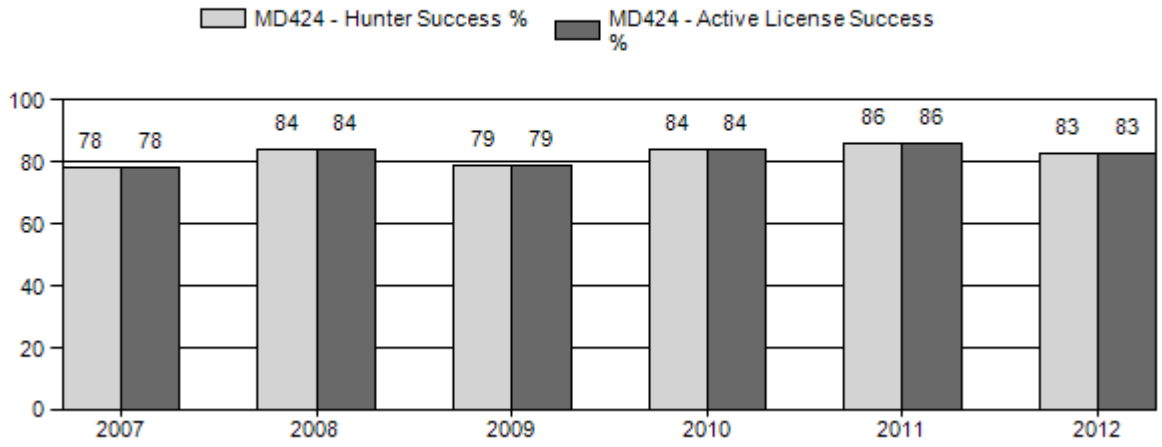
Harvest



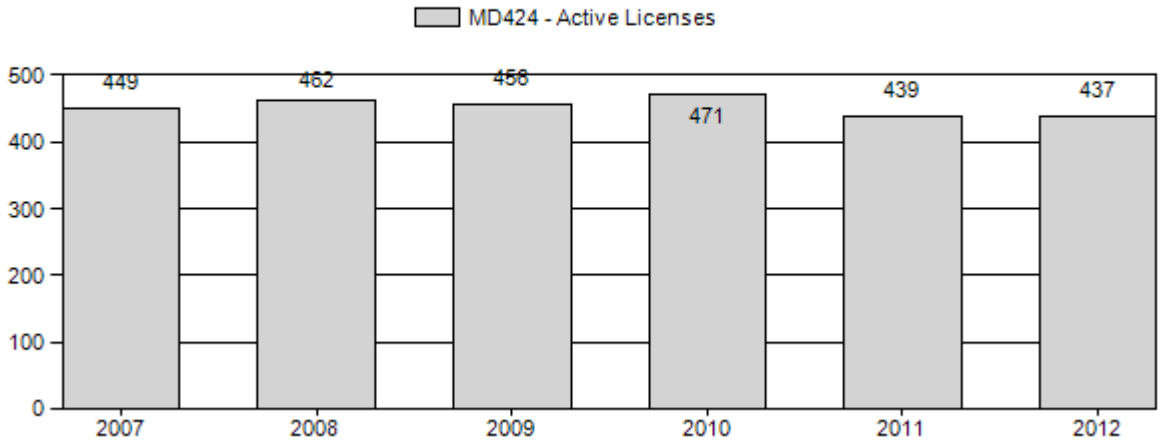
Number of Hunters



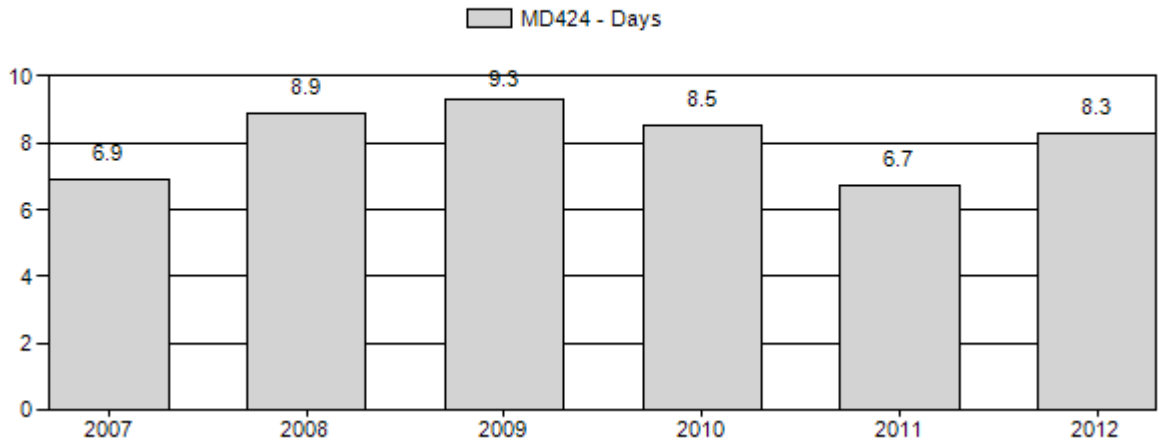
Harvest Success



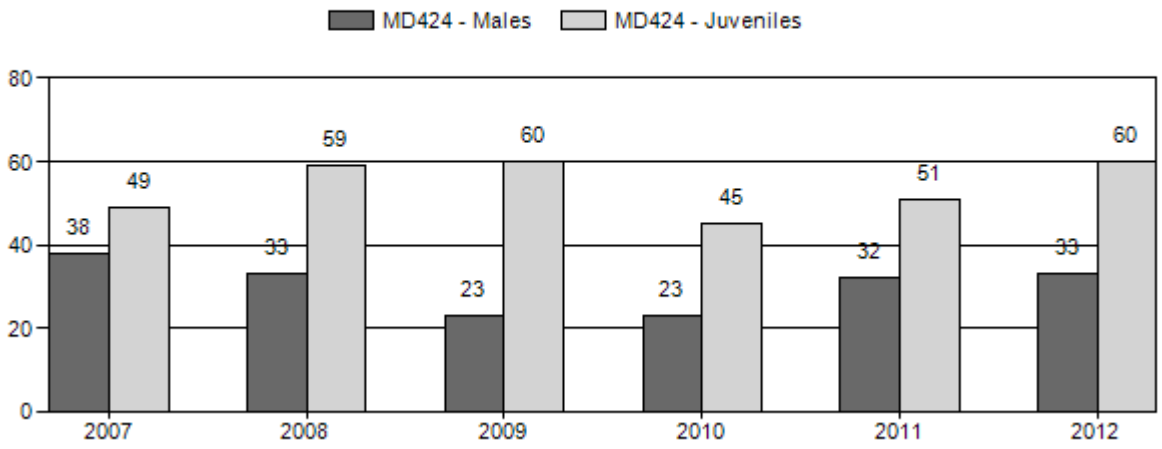
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD424 - SOUTH ROCK SPRINGS

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	7,100	35	92	127	20%	334	53%	165	26%	626	1,237	10	28	38	± 6	49	± 7	36
2008	7,100	90	183	273	17%	839	52%	495	31%	1,607	1,040	11	22	33	± 3	59	± 4	45
2009	7,500	61	120	181	12%	798	55%	482	33%	1,461	1,048	8	15	23	± 0	60	± 0	49
2010	7,500	47	55	102	14%	446	60%	200	27%	748	1,048	11	12	23	± 0	45	± 0	36
2011	6,800	38	108	146	18%	453	55%	229	28%	828	1,030	8	24	32	± 4	51	± 5	38
2012	6,235	55	129	184	17%	558	52%	334	31%	1,076	0	10	23	33	± 3	60	± 5	45

2013 HUNTING SEASONS
SOUTH ROCK SPRINGS MULE DEER HERD (MD424)

Hunt Area	Type	SEASON DATES Opens	Closes	Quota	Limitations
101	1	Oct. 15	Oct. 31	50	Limited quota; antlered deer
102	1	Oct. 15	Oct. 31	400	Limited quota; any deer
Archery		Sept. 01	Sept. 30		Refer to license type and limitations in Section 3.

Hunt Area	Type	Quota change from 2012
Herd Unit Total		**None**

Management Evaluation
Current Management Objective: 11,750
Management Strategy: Special
2012 Postseason Population Estimate: ~6,200
2013 Proposed Postseason Population Estimate: ~6,300

The post-season population objective for the South Rock Springs mule deer herd is 11,750 deer under special management. The objective for this population was changed from 10,000 deer to 11,750 when the South Rock Springs and Black Butte herds were combined in the 1980's.

Herd Unit Issues

This herd has been well below this objective since the objective was set in the 1980's and most likely will continue to remain below objective for the foreseeable future. Current population estimates suggest this herd may be around 6,200 deer after the 2012 hunting season with a slowly increasing trend. The lack of growth in this herd despite very conservative hunting seasons can be attributed to poor fawn recruitment year after year. Observed fawn to doe ratios for this herd has averaged only 60 fawns per 100 does for the last decade. This level of juvenile recruitment is adequate for population maintenance, but does not allow for population growth.

Weather

Tougher than normal winter conditions during the 2010-2011 winter resulted in higher than normal over winter mortality in this herd. However, a significant portion of the herd was able to migrate south into Colorado and Utah to milder conditions than many other herds in southwest Wyoming. Because of this, the South Rock Springs herd probably experienced only slightly higher than normal winter mortality based on observed yearling buck ratios in the post-hunt classifications. The 2011-2012 winter by comparison for the most part significantly more mild than the previous winter and was relatively dry. The summer of 2012 was extremely dry with little summer precipitation. This lack of moisture was especially evident in areas of the herd unit below 8,000 ft, while the higher elevation parturition areas for the herd unit received enough snow and summer precipitation to allow for plant growth. This probably resulted in fewer fawns dying to cold, wet conditions during the early summer and could be the cause for the slightly improved fawn ratios seen in 2012. The drought conditions at the lower elevation winter ranges of the herd unit will probably affect this herd to some extent most likely in the form of lower fawn ratios in 2013 caused by poorer condition of does during gestation.

Habitat

The Green River aquatic habitat biologist has established six aspen regeneration monitoring transects throughout the South Rock Springs Mule Deer Herd unit. These transects are designed to evaluate browsing impacts from ungulates, primarily elk on young aspen. Two transects were established on Little Mountain in 2007 as well as four additional transects that were established in 2009, one each on Aspen and Miller Mountains and two in the Pine Mountain area. These transects were read each summer since their establishment..

A detailed accounting of the technique and results from these monitoring efforts can be found in the aquatic habitat annual report. In general, this method compares the height of the initial growth point for the current year's terminal leader to the height of the tallest previous terminal leader branch that was killed as a result of browsing. A positive Live-Dead (LD) value suggests growth of young trees, while a negative value or value near zero suggests that browsing may be suppressing tree growth. Results of monitoring efforts are presented in the following table (Table 1) taken from the aquatic habitat annual progress report, but in general, four of the six sites showed negative LD values for 2012, which can most likely be attributed to decreased moisture during 2012 compared to previous years.

Table 1. Trends in aspen regeneration LD Index values (vertical inches) for LME 2009-2012

Monitoring site	2009	2010	2011	2012
Pine Mt/Red Ck.	-4.1	-2.4	-0.5	-3.0
South Pine Mt.	+1.9	0	+0.7	-3.2
Miller Mt.	-1.6	+7.4	+8.7	+5.3
Aspen Mt.	-1.8	-1.2	+1.5	-6.0
Little Mt./Dipping Spr.	-15.2	-4.8	-4.1	-2.6
Little Mt./West Currant Ck.	NA	-17.6	+4.2	0

Field Data

This herd was classified from the ground during November and December 2012. The total number of deer classified for the herd unit was 1,076 deer. The resulting ratios from the ground classification effort were an observed ratio of 60 fawns per 100 does as well as 33 total bucks which included 10 yearling bucks per 100 does. This observed fawn ratio is generally in line with average ratios for this population.

Harvest Data

In general, the South Rock Springs Mule Deer Herd continues to maintain good hunter success. The success rates for the two hunt areas in this herd unit were 77% for Hunt Area 101 and 83% for Hunt Area 102 in 2012. These success rates are typical for this herd unit with the success rate showing a generally stable trend over the last several years.

Because the South Rock Springs Mule Deer Herd is a special management herd and because of its local importance, successful hunters are asked to voluntarily submit tooth samples for cementum annuli ageing analysis. Successful hunters submitted 132 samples for analysis from the 2012 hunting season. Based on those samples, the average age of harvested bucks was 4.5 years old in 2012. The average age of harvested bucks was5.0 years old in 2010 and 2011, the 2009 average was 5.2 years old and 5.1 years old in 2008. Based on hunter submitted tooth samples, the oldest deer harvested during the 2012 season were four 8.5-year-old bucks; identical to what was submitted from the 2011 hunting season.

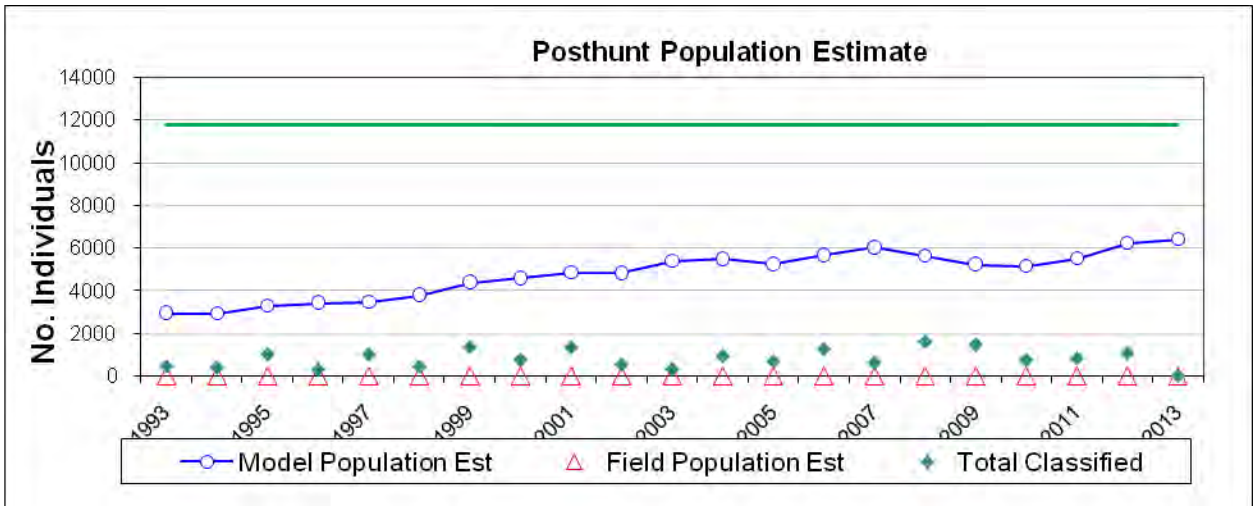
Population

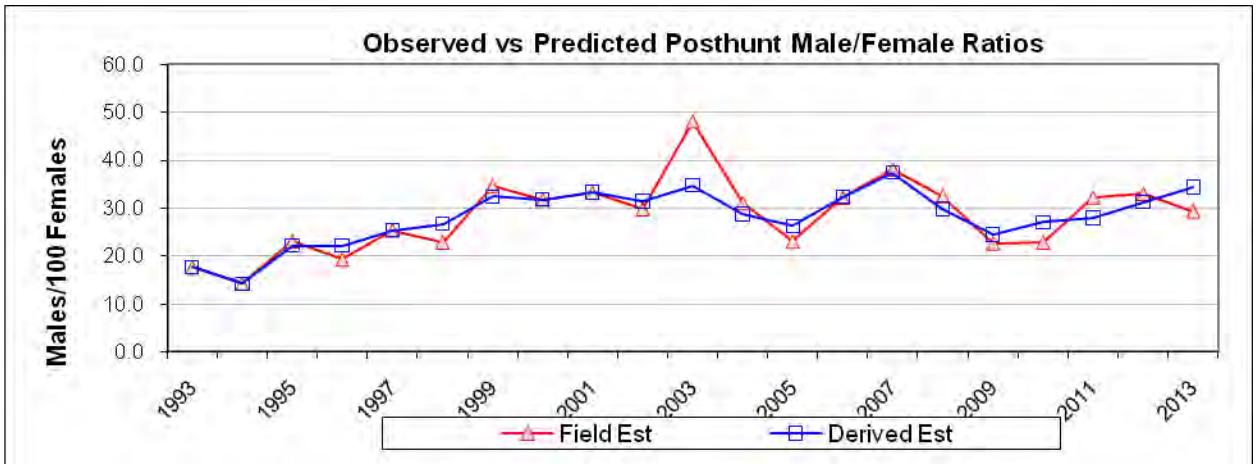
The model for this herd tracks only moderately well to poorly with observed data in particular with the observed buck ratios, and sharing this herd with Colorado and Utah continues to decrease its overall reliability. The model selected for this herd is the time-specific juvenile survival model based its ability to produce the most realistic estimate for this population and does the best job of aligning simulated buck ratios to observed data. Additional information from the harvest survey, classifications, and reliable age data from lab-aged teeth from hunter-harvested deer combined with the model help in management of this popular and locally significant herd.

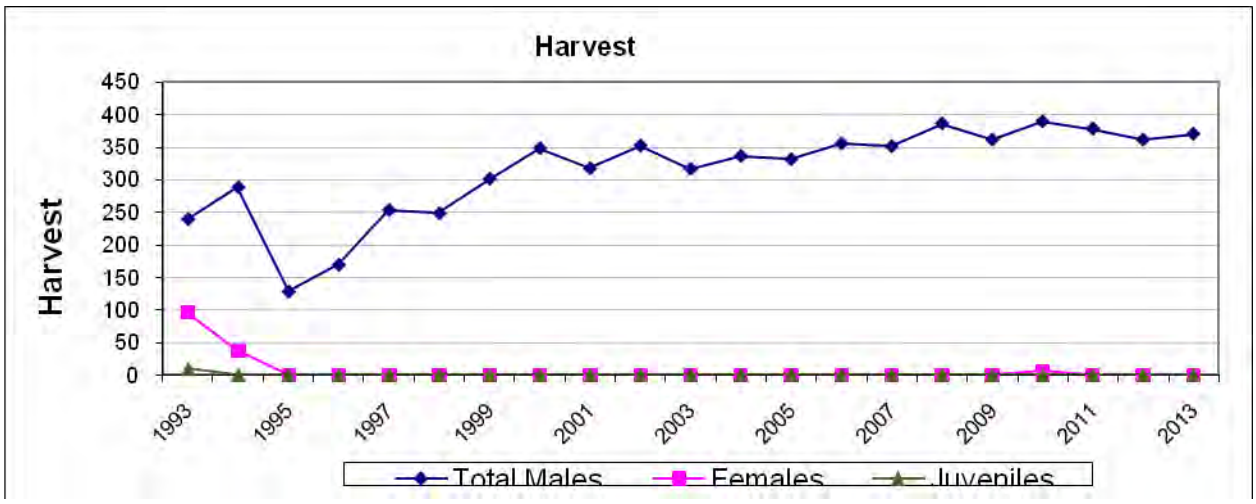
Management Summary

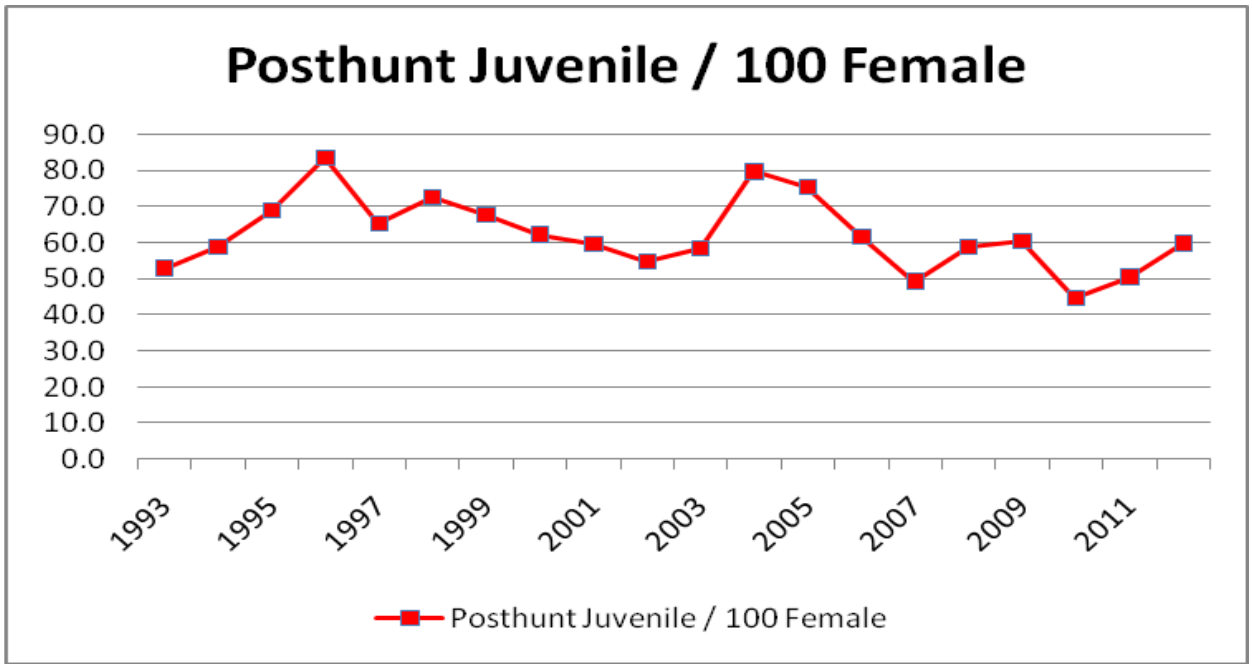
The 2013 hunting season is similar to how this herd has been managed since 2007 and is identical to the 2012 season structure. Despite the conservative seasons that have been set for this herd unit, observed buck to doe ratios are at the lower end allowed for a special management herd and public desires for higher buck ratios has led to frequent requests to decrease the number of licenses issued especially in Hunt Area 102. However, classifications compared to the number of licenses issued over the past 14 years, when there has been no issuance of doe

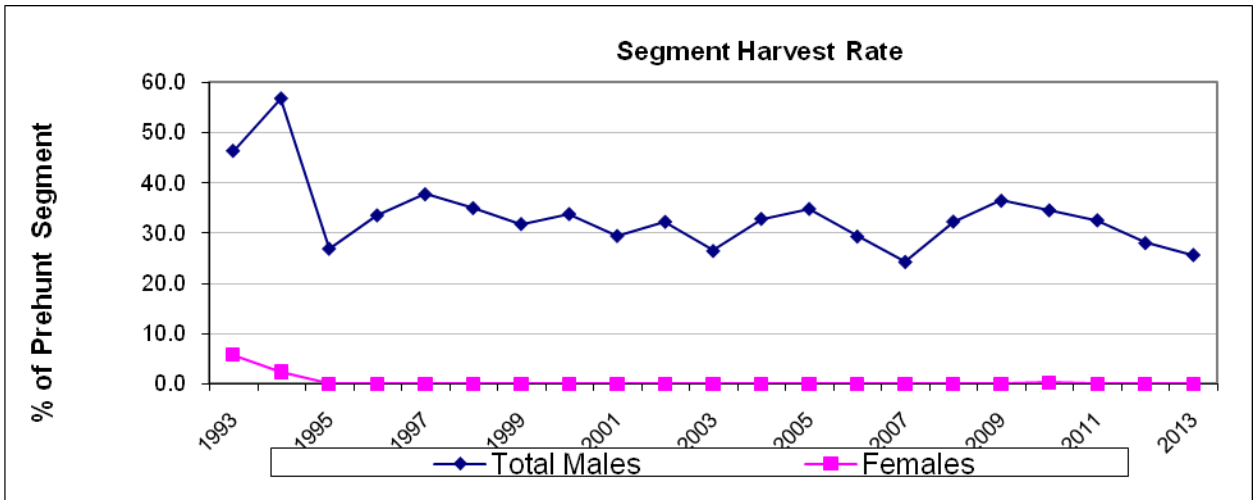
licenses, shows little correlation between license issuance levels and postseason buck to doe ratios. The most likely explanation for this is emigration of young bucks out of the state, but that hypothesis is based on speculation and deserves study to attempt to quantify if emigration is occurring and if it is occurring, at what level. It is possible that young bucks could be moving into Utah where the average age of bucks is less that in the Wyoming portion of the herd. This is suggested by the fact that the model does a poor job of aligning simulated and observed buck to doe ratios.

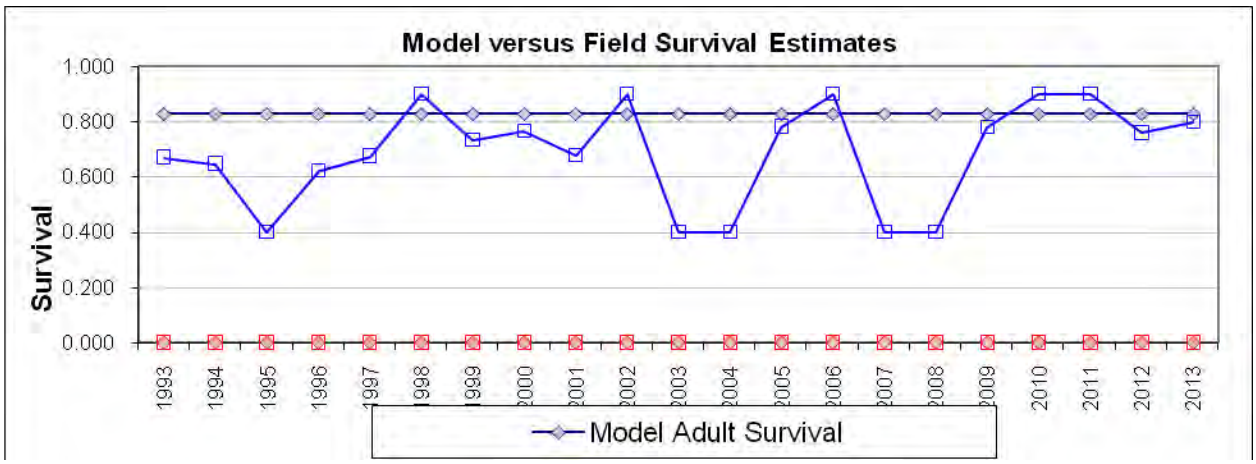

Posthunt Population Estimate
No. Individuals
14000
12000
10000
8000
6000
4000
2000
0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Model Population Est
Field Population Est
Total Classified

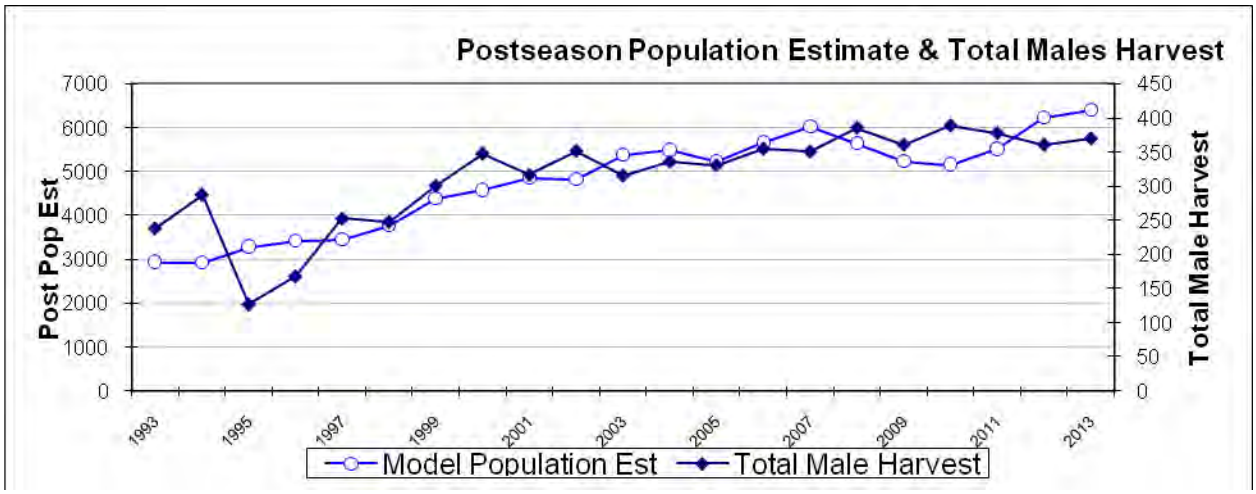

Observed vs Predicted Posthunt Male/Female Ratios
Males/100 Females
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Field Est
Derived Est


Harvest
Harvest
450
400
350
300
250
200
150
100
50
0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Total Males
Females
Juveniles


Posthunt Juvenile / 100 Female
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
Posthunt Juvenile / 100 Female


Segment Harvest Rate
% of Prehunt Segment
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Total Males
Females


Model versus Field Survival Estimates
Survival
1.000
0.800
0.600
0.400
0.200
0.000
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Model Adult Survival


Postseason Population Estimate & Total Males Harvest
Post Pop Est
Total Male Harvest
7000
6000
5000
4000
3000
2000
1000
0
450
400
350
300
250
200
150
100
50
0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Model Population Est
Total Male Harvest

INPUT	
Species:	Mule Deer
Biologist:	Patrick Burke
Herd Unit & No.:	MD424 SRS
Model date:	02/12/13

☑ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report
CJ,CA	Constant Juvenile & Adult Survival	64	73	☐ CJ,CA Model
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	11	-3517	☐ SCJ,SCA Mod
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	16	135	☑ TSJ,CA Model

Population Estimates from Top Model

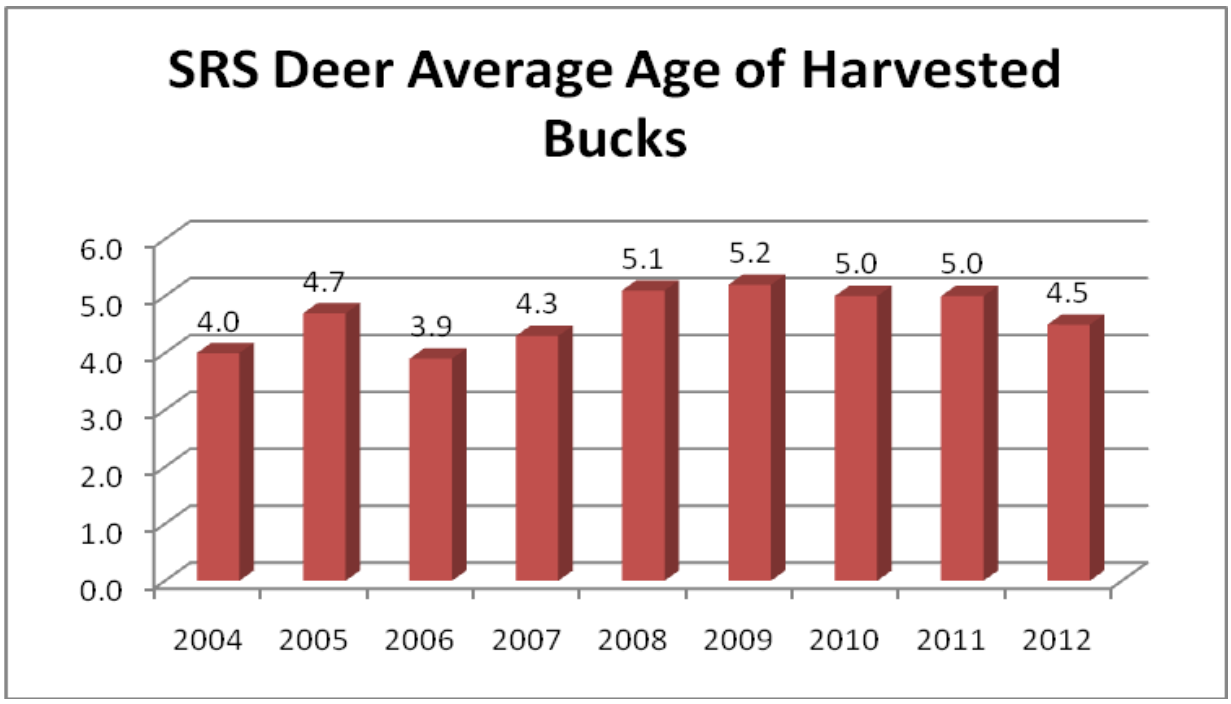
Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				925	568	1829	3322	914	305	1725	2944	11750
1994				998	559	1734	3291	998	242	1694	2934	11750
1995				1190	523	1725	3438	1190	382	1725	3297	11750
1996				1390	555	1666	3611	1390	369	1666	3425	11750
1997				1184	738	1812	3735	1184	460	1812	3456	11750
1998				1380	780	1900	4060	1380	508	1900	3788	11750
1999				1486	1041	2194	4721	1486	710	2194	4390	11750
2000				1470	1133	2361	4964	1470	750	2361	4581	11750
2001				1504	1184	2518	5207	1504	836	2518	4859	11750
2002				1421	1201	2594	5217	1421	814	2594	4830	11750
2003				1632	1314	2787	5733	1632	966	2787	5385	11750
2004				2100	1126	2634	5860	2100	757	2634	5490	11750
2005				1963	1046	2601	5610	1963	682	2601	5246	11750
2006				1801	1332	2920	6053	1801	942	2920	5663	11750
2007				1595	1590	3228	6413	1595	1204	3228	6026	11750
2008				1765	1316	2991	6072	1765	891	2991	5647	11750
2009				1709	1091	2829	5629	1709	693	2829	5232	11750
2010				1346	1240	3008	5594	1346	812	3002	5161	11750
2011				1563	1278	3092	5932	1563	862	3092	5517	11750
2012				1953	1417	3263	6633	1953	1020	3263	6235	11750
2013				1782	1586	3442	6810	1782	1179	3442	6403	11750
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

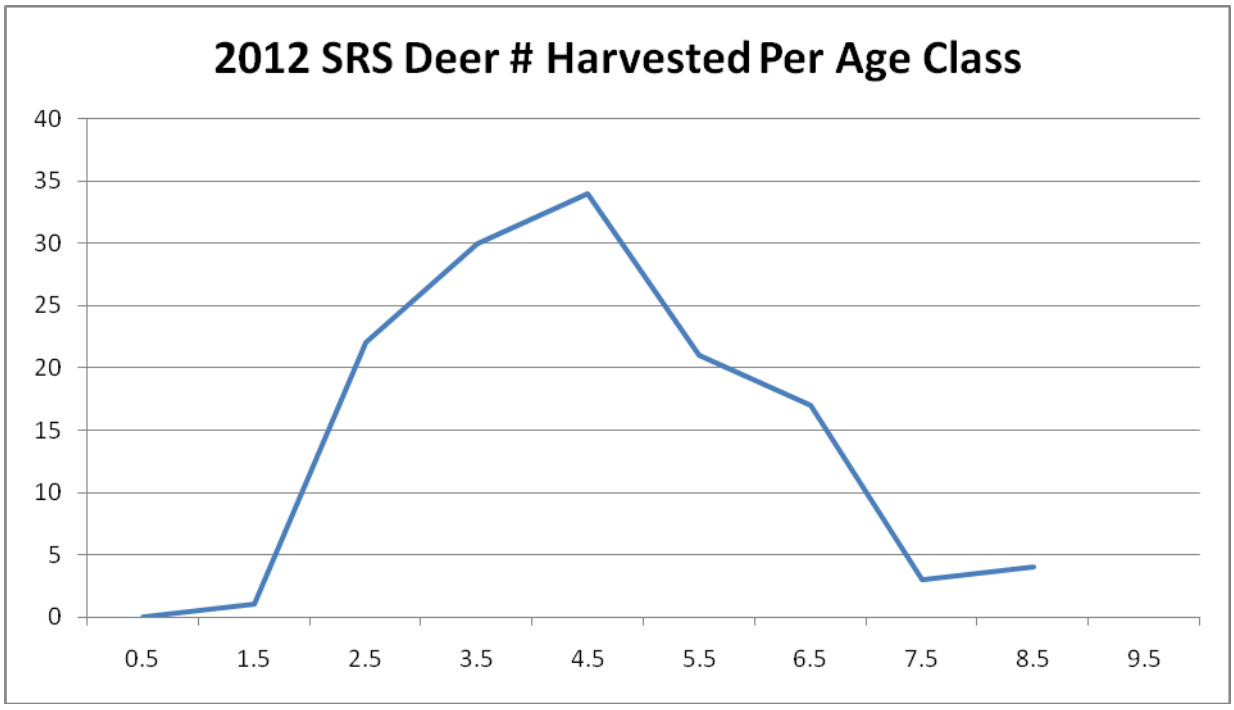
Survival and Initial Population Estimates

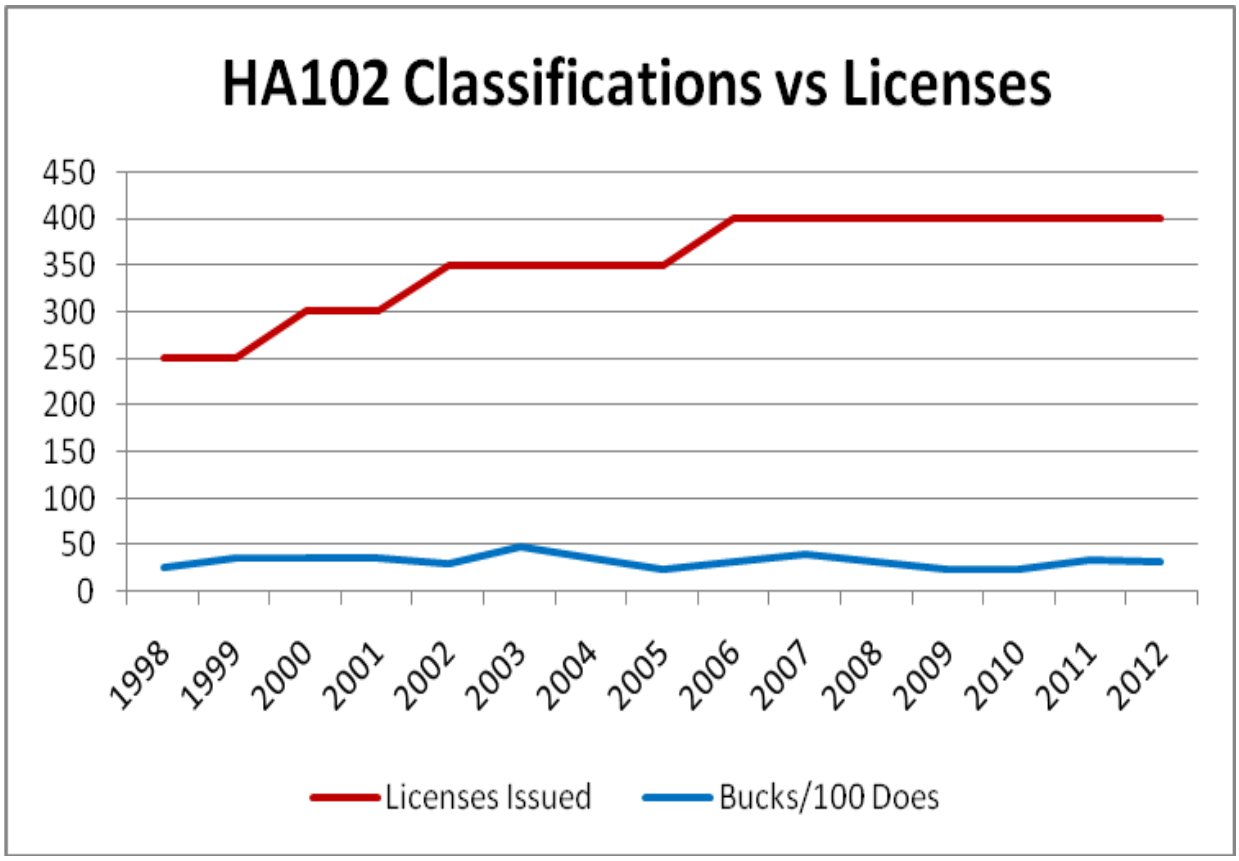
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.67			0.83		
1994	0.65			0.83		
1995	0.40			0.83		
1996	0.62			0.83		
1997	0.67			0.83		
1998	0.90			0.83		
1999	0.73			0.83		
2000	0.77			0.83		
2001	0.68			0.83		
2002	0.90			0.83		
2003	0.40			0.83		
2004	0.40			0.83		
2005	0.78			0.83		
2006	0.90			0.83		
2007	0.40			0.83		
2008	0.40			0.83		
2009	0.78			0.83		
2010	0.90			0.83		
2011	0.90			0.83		
2012	0.76			0.83		
2013	0.80			0.83		
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						
2023						
2024						
2025						

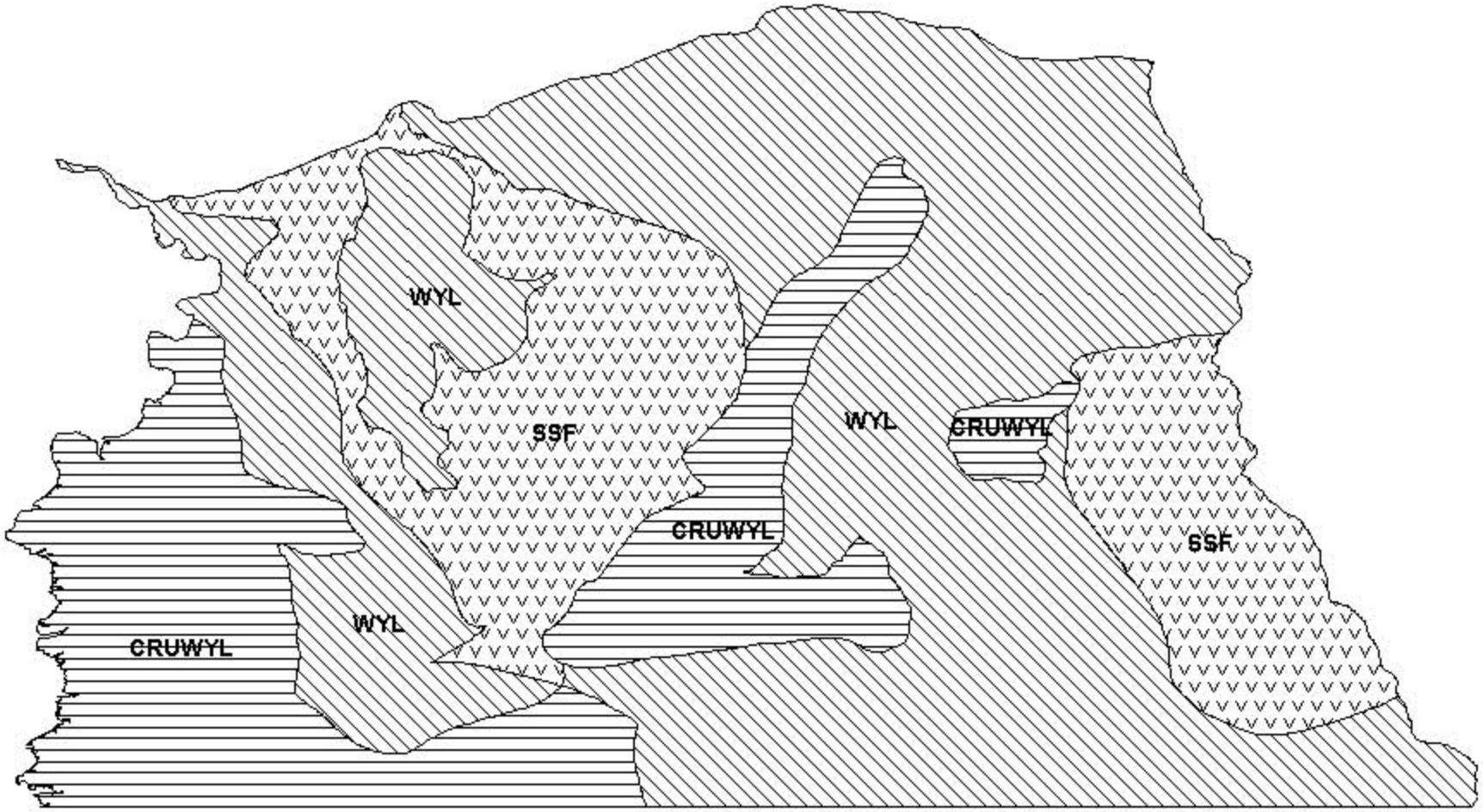
Parameters:	Optim cells
Adult Survival =	0.828
Initial Total Male Pop/10,000 =	0.030
Initial Female Pop/10,000 =	0.172

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%


SRS Deer Average Age of Harvested Bucks
6.0
5.0
4.0
3.0
2.0
1.0
0.0
4.0
4.7
3.9
4.3
5.1
5.2
5.0
5.0
4.5
2004
2005
2006
2007
2008
2009
2010
2011
2012


2012 SRS Deer # Harvested Per Age Class
40
35
30
25
20
15
10
5
0
0.5
1.5
2.5
3.5
4.5
5.5
6.5
7.5
8.5
9.5


HA102 Classifications vs Licenses
450
400
350
300
250
200
150
100
50
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Licenses Issued
Bucks/100 Does



Mule Deer (MD424) - South Rock Springs
HA 101, 102
Revised - 3/94

N

2013 Proposed - Season Setting Evaluation Form

Species: Mule Deer | Period: 6/1/2012 - 5/31/2013

Herd: MD427 - BAGGS

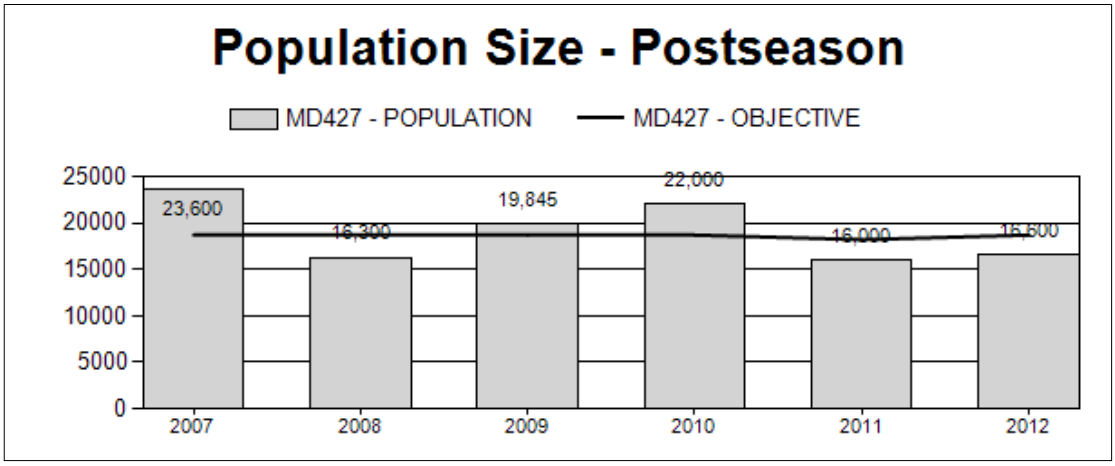
Hunt Areas: 82, 84, 100 | Prepared By: TONY MONG

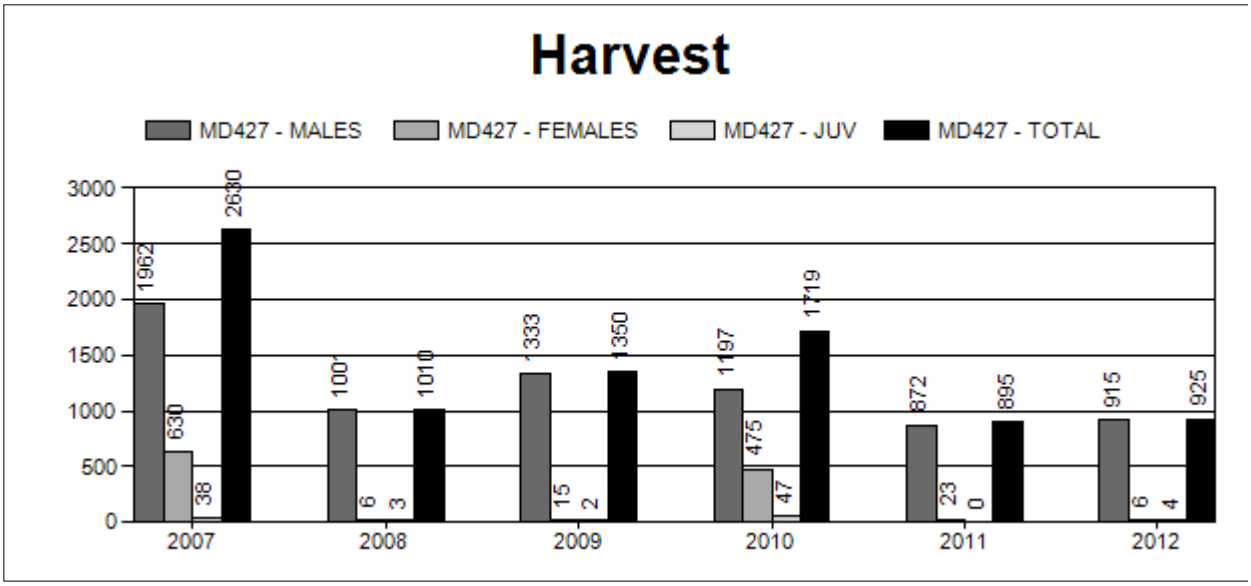
	2007 - 2011 Average	2012	2013 Proposed
Population:	19,549	16,600	14,400
Harvest:	1,521	933	1,067
Hunters:	2,883	1,992	2,200
Hunter Success:	53%	47%	48 %
Active Licenses:	2,934	1,992	2,100
Active License Percent:	52%	47%	51%
Recreation Days:	13,993	8,806	9,700
Days Per Animal:	9.2	9.4	9.1
Males per 100 Females	23	31	
Juveniles per 100 Females	55	78	

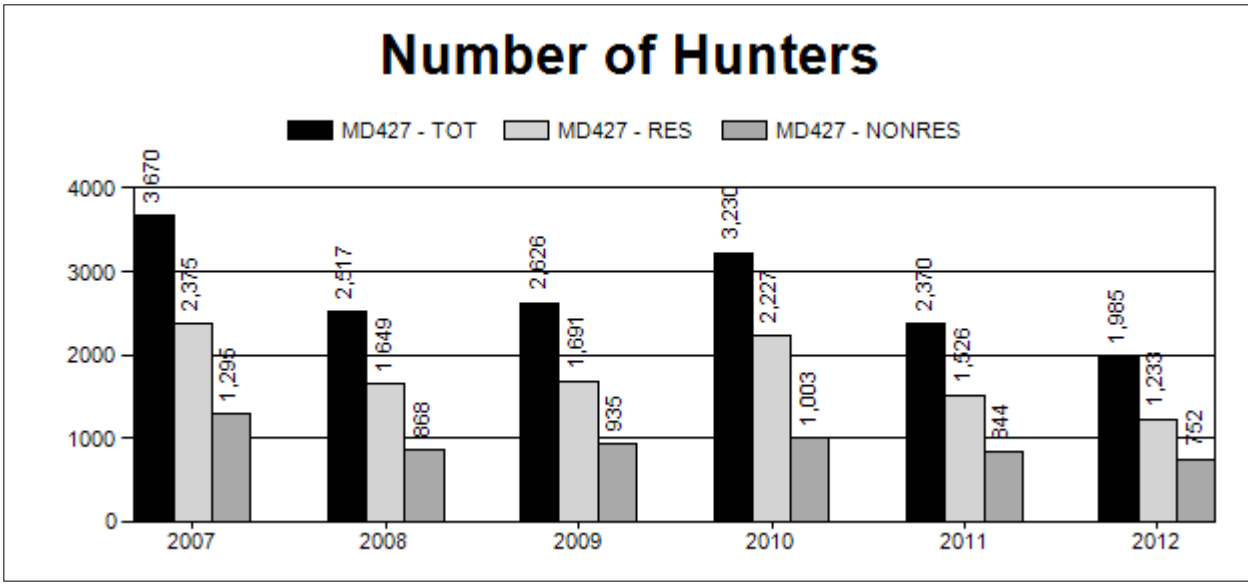
Population Objective:	18,700
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-11.2%
Number of years population has been + or - objective in recent trend:	2
Model Date:	03/05/2013

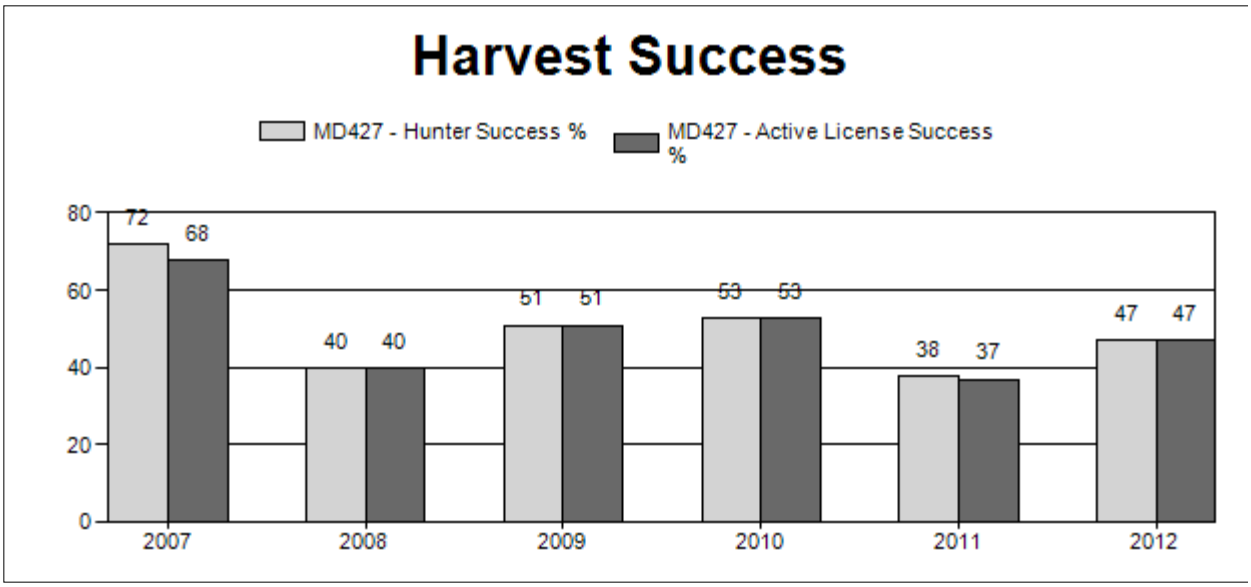
Proposed harvest rates (percent of pre-season estimate for each sex/age group):

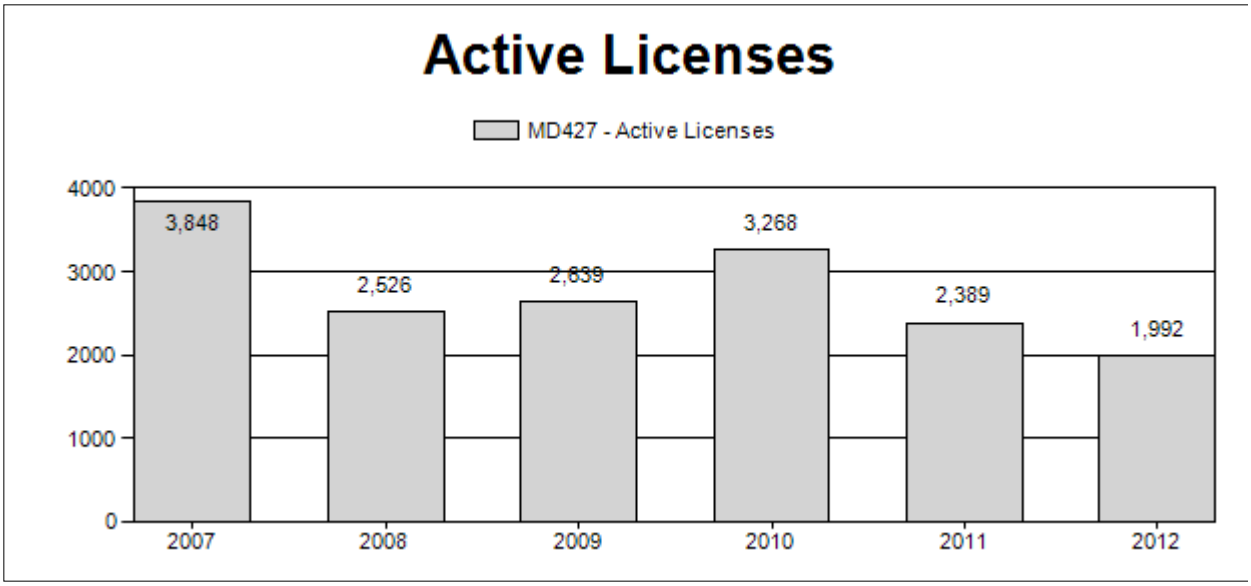
	JCR Year	Proposed
Females ≥ 1 year old:	0.2%	0.2%
Males ≥ 1 year old:	22.8%	36%
Juveniles (< 1 year old):	0%	0%
Total:	3.4%	3%
Proposed change in post-season population:	17.8%	13%

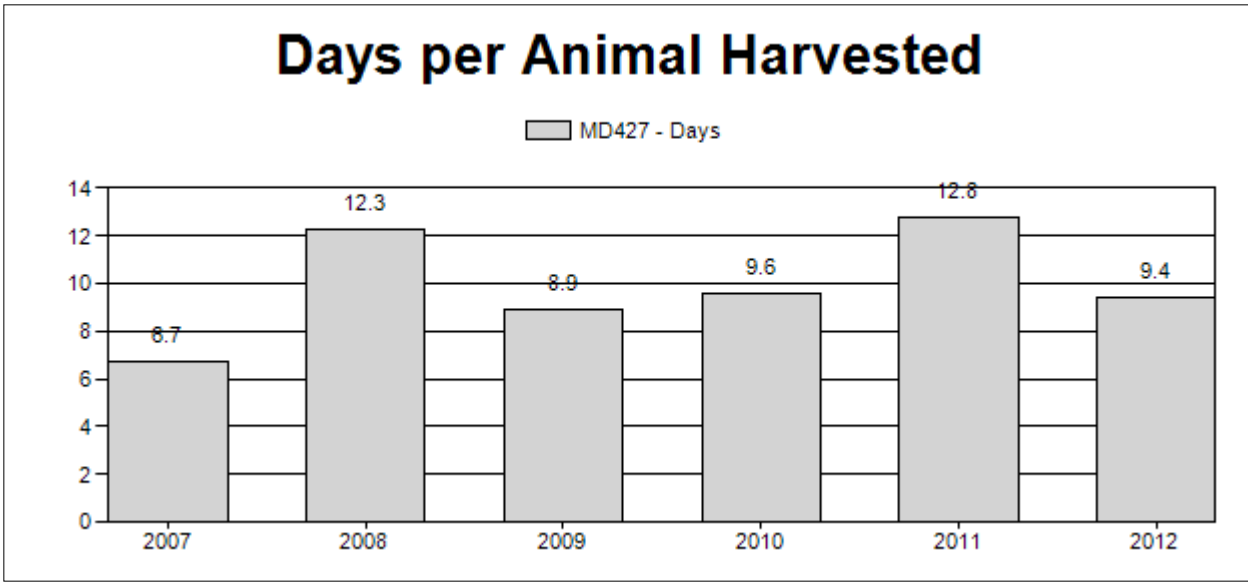


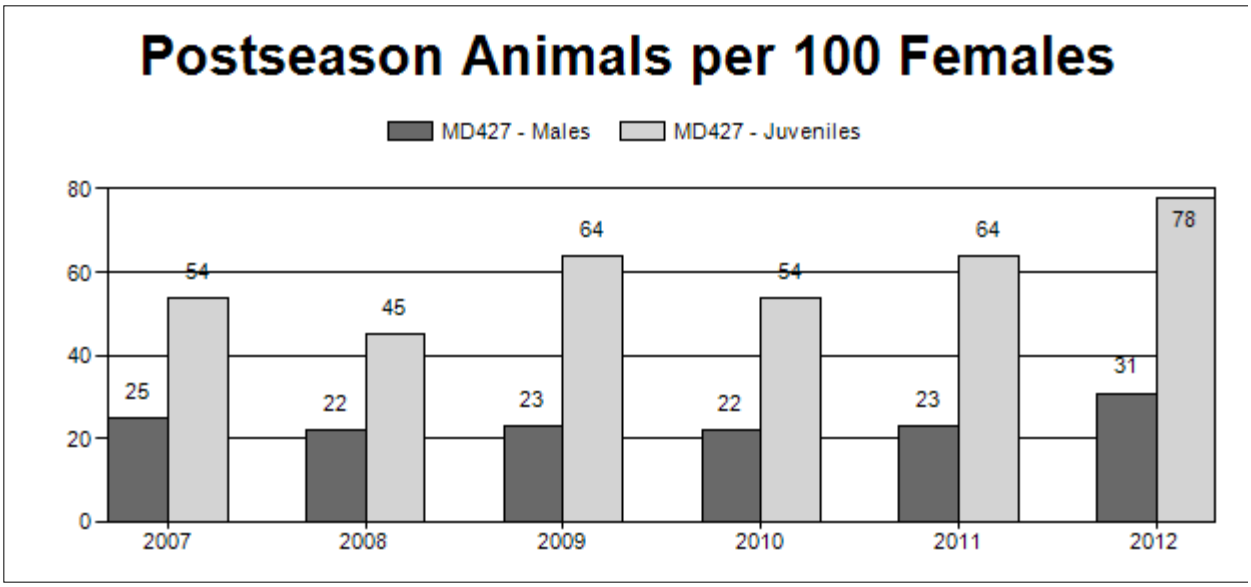

Harvest
MD427 - MALES
MD427 - FEMALES
MD427 - JUV
MD427 - TOTAL
3000
2500
2000
1500
1000
500
0
1962
630
38
2630
1001
6
3
1010
1333
15
2
1350
1197
475
47
1719
872
23
0
895
915
6
4
925
2007
2008
2009
2010
2011
2012


Number of Hunters
MD427 - TOT
MD427 - RES
MD427 - NONRES
4000
3000
2000
1000
0
3670
2,375
1,295
2,417
1649
868
2,626
1,691
935
3,230
2,227
1,003
2,370
1,526
844
1,985
1,233
752
2007
2008
2009
2010
2011
2012


Harvest Success
MD427 - Hunter Success %
MD427 - Active License Success %
80
60
40
20
0
72
68
40
40
51
51
53
53
38
37
47
47
2007
2008
2009
2010
2011
2012


Active Licenses
MD427 - Active Licenses
4000
3000
2000
1000
0
3,848
2,526
2,639
3,268
2,389
1,992
2007
2008
2009
2010
2011
2012


Days per Animal Harvested
MD427 - Days
14
12
10
8
6
4
2
0
6.7
12.3
8.9
9.6
12.8
9.4
2007
2008
2009
2010
2011
2012


Postseason Animals per 100 Females
MD427 - Males
MD427 - Juveniles
80
60
40
20
0
25
54
22
45
23
64
22
54
23
64
31
78
2007
2008
2009
2010
2011
2012

2013 HUNTING SEASONS

SPECIES : **Mule Deer** HERD UNIT : **Baggs (427)**
HUNT AREAS: **82, 84, 100**

Hunt Area	Type	Open	Close	Quota	Limitations
82		Oct. 1	Oct. 9		General license; antlered mule deer 3 points or more on either antler or any white-tailed deer
		Oct. 10	Oct. 14		General youth license; any deer
84	1	Oct. 1	Oct. 9	75	Limited quota; antlered mule deer or any white-tailed deer
100		Oct. 1	Oct. 5		General license; antlered mule deer 3 points or more on either antler or any white-tailed deer
		Oct. 1	Oct. 7		General youth license; any deer
82	Archery	Sept. 1	Sept. 30		General license; antlered deer
84, 100	Archery	Sept. 1	Sept. 30		Refer to Section 3

Region W Nonresident Quota: 900

Hunt Area	Type	Quota change from 2012
82	1	-10
Herd Unit Total	**1**	**-10**

Management Evaluation
Current Management Objective: 18,700
Management Strategy: Recreational
2012 End-of-bio-year Estimate: ~16,600
2013 Proposed Postseason Population Estimate: ~14,400

Herd Unit Issues

The Baggs mule deer herd is below the objective of 18,700 (which was established in 1986) and our current management strategy is to increase herd size.

Oil and gas development associated with the Atlantic Rim Project continues to impact this deer population, and impacts are increasing as the size of this development increases. Additionally, within 2 years, we expect to see the development of the largest wind energy project in North America, the Chokecherry-Sierra Madre Wind Project. A recently published study clearly outlines negative impacts of the increase in oil and gas development activities on migrating mule deer within the Baggs herd unit (Sawyer et al 2012). The study found that mule deer migrated quicker through areas with high levels of development and spend less time in stop over sites. In addition to the Atlantic Rim project, many parcels of public land on the west side of the Sierra

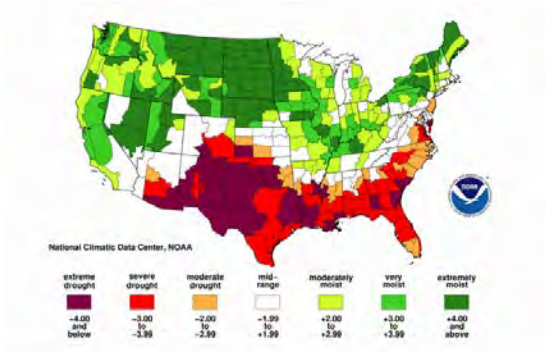
Madre mountain range have been leased for oil and gas development, as has the bulk of this population's winter ranges. Energy developments and proposals in this herd unit range from traditional oil and gas developments to coal bed methane, in-situ uranium, and wind energy developments. In addition, elk and feral horse use of winter range habitats is increasing, potentially to the detriment of this species.

Weather

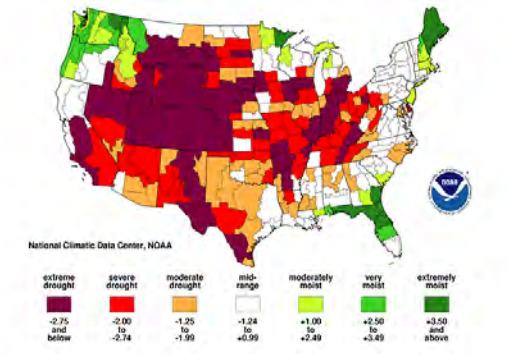
Within the last several years, we have seen extreme weather conditions within this herd unit. This has lead to variation in fawn and adult survival, fawn production and hunting conditions. In 2010-11 moisture levels were at record highs with high snow levels, followed in 2011-12 with record drought conditions and low snow levels (Figure 1).

Figure 1. A) Palmer short-term drought index from June 2011. B) Palmer short-term drought index from June 2012

A)



B)



Field Data

Significant variation in weather conditions and severe winters continue to impact this mule deer population. The winter of 2010-11 was the second severe winter experienced in this herd unit in 4 years, followed by one of the driest on record (2011-12), which resulted in very difficult summer conditions for deer. Because of high moisture levels from the summer/fall of 2011, most deer were in very good condition going into the winter of 2011-12, and resulted in a very large fawn crop during the spring/summer of 2012, most does producing twins. In a normal moisture year this would equate to a large increase in population. However, the summer of 2012 was under extreme drought designation, and does were unable to both build fat reserves and raise fawns. It appeared more does were in poor condition entering the 2012-13 winter, and fawns appeared to be smaller than previous years. Classification flights suggested the antler point

restriction implemented to increase buck ratios was successful. However harvest did not decrease from 2011 to 2012 as is normally expected during the first year of an antler point-restriction. The survey also yielded higher than average fawn ratios, the highest observed in nearly 15 years. Fawn ratios have been higher, on average since 2007-08, when compared to the period preceding 2007. Normally this would have resulted in a quick return to population objective levels, but the population has experienced higher than average losses during severe winter events.

Harvest Data

The 2011 hunting season saw the lowest hunter success (38%) experienced in the Baggs herd since 1997. In 2012, despite the antler point restriction, our harvest success increased to 47%. This increase can be attributed to variation in hunting weather conditions, deer distribution, activity levels of deer, and an increasing population of deer. In 2011 the high moisture levels increased forage production, and allowed deer to be widely scattered, whereas 2012 produced less forage and concentrated deer in the areas with moisture. In addition, deer seemed to spend more time feeding and moving in these areas. We believe these factors led to animals being more vulnerable to harvest and thus increasing the harvest success.

Population

The current postseason population model estimates for 2012 suggest we are still below objective at around 16,300 animals. Despite the SCJ, SCA model having the lowest relative AICc value, we chose the TSJ, CA model based on what we believe to be a better representation of the actual population trend. The results of this model are consistent with harvest statistics, hunter satisfaction, plausibility, and field observations. The SCJ, SCA model shows a population that was nearly 3 times over objective before the winter of 2007-08 and that does not seem to be biologically feasible.

Discontent of hunters in 2010 and 2011, coupled with the TSJ, CA model population estimate seems to suggest our current management goal of increasing deer numbers in this herd unit is reasonable. The spreadsheet model seems to be a useful tool to estimate trend for this herd unit, but should be viewed with some caution without an independent estimate of population size.

Management Summary

The 2013 conservative season and use of an antler point restriction will allow for continued growth of this deer population, and will address the main concerns raised by sportsmen, mainly lower than desired deer numbers and buck ratios. Despite the observed increase in buck ratios from 2011 to 2012, we agreed to maintain the antler point restriction for 2 years. The 2013 hunting season will be the final year of the point restriction. Higher buck ratios did allow us to increase the number of days available to hunters to hunt in Hunt Area 82 for 2013, but the additional days fall within the middle of the week and will significantly increase harvest. In order to address lower deer numbers in the Baggs herd, general seasons are for antlered deer, only, and all doe/fawn licenses have been eliminated. Doe harvest will be restricted until deer numbers are at or above objective.

In an effort to increase youth opportunities, five days of youth only deer hunting will be offered in 2013 following the general season in Area 82, and two extra days in Area 100. . Youth are permitted to harvest any deer, statewide, including all bucks, does, and fawns.

Reference

Sawyer, H. M. J. Kauffman, A. D. Middleton, T.A. Morrison, R. M. Nielson and T. B. Wyckoff. 2012. A framework for understanding semi-permeable barrier effects on migratory Ungulates. Journal of Applied Ecology 50:68-78

INPUT	
Species:	Deer
Biologist:	Tony Mong
Herd Unit & No.:	Baggs Herd, 427
Model date:	02/25/13

Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report	Notes
CJ,CA	Constant Juvenile & Adult Survival	232	241	CJ,CA Model	
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	113	133	SCJ,SCA Mo	
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	13	165	TSJ,CA Model	

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				4982	3059	10572	18613	4814	1821	9402	16038	18700
1994				5482	2858	9280	17621	5482	2114	9280	16876	18700
1995				5678	3282	9353	18314	5678	2203	9353	17234	18700
1996				7127	4126	10183	21435	7127	2979	10183	20289	18700
1997				7877	3949	10051	21877	7877	2608	10016	20501	18700
1998				6037	3785	10060	19882	6024	2375	9715	18114	18700
1999				5882	4723	10940	21545	5805	2668	10399	18872	18700
2000				6916	4872	11422	23210	6880	2636	11141	20656	18700
2001				5203	3763	10968	19935	5203	2285	10967	18455	18700
2002				5682	4135	11490	21306	5682	2223	11490	19394	18700
2003				5200	4193	12043	21436	5179	2501	11816	19496	18700
2004				6591	4143	12034	22768	6570	2570	11725	20865	18700
2005				6450	4321	12077	22848	6406	2935	11798	21140	18700
2006				6473	5261	12769	24503	6442	3285	12140	21866	18700
2007				6393	5036	12537	23966	6352	2875	11844	21071	18700
2008				4335	3324	9731	17390	4331	2223	9725	16279	18700
2009				6475	3832	10187	20494	6473	2366	10170	19009	18700
2010				5170	3424	10035	18628	5118	2107	9512	16737	18700
2011				4499	2596	7107	14201	4499	1630	7081	13210	18700
2012				6223	3405	8023	17652	6219	2386	8017	16621	18700
2013				4334	3265	8035	15633	4328	2091	8028	14447	18700
2014				4506	3326	8356	16187	4501	2152	8349	15003	18700
2015				4672	3403	8652	16728	4661	2230	8646	15537	18700

Survival and Initial Population Estimates

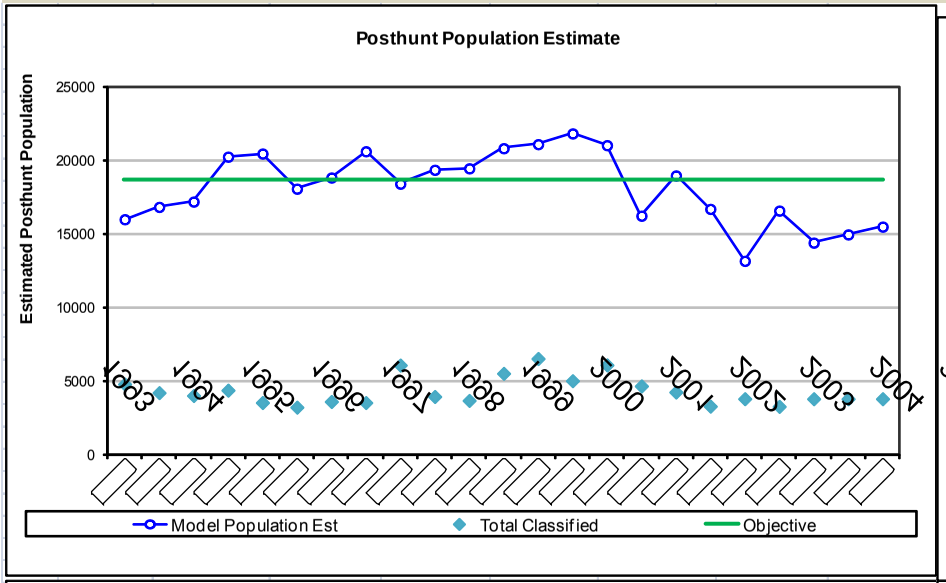
Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.55			0.85		
1994	0.54			0.85		
1995	0.80			0.85		
1996	0.40			0.85		
1997	0.40			0.85		
1998	0.90			0.85		
1999	0.90			0.85		
2000	0.44			0.85		
2001	0.85			0.85		
2002	0.81			0.85		
2003	0.78			0.85		
2004	0.65			0.85		
2005	0.87			0.85		
2006	0.70			0.85		
2007	0.40			0.71		
2008	0.90			0.85		
2009	0.44			0.85		
2010	0.51			0.61		
2011	0.90			0.85		
2012	0.40			0.85		
2013	0.72			0.85		
2014	0.70			0.85		
2015	0.40			0.85		

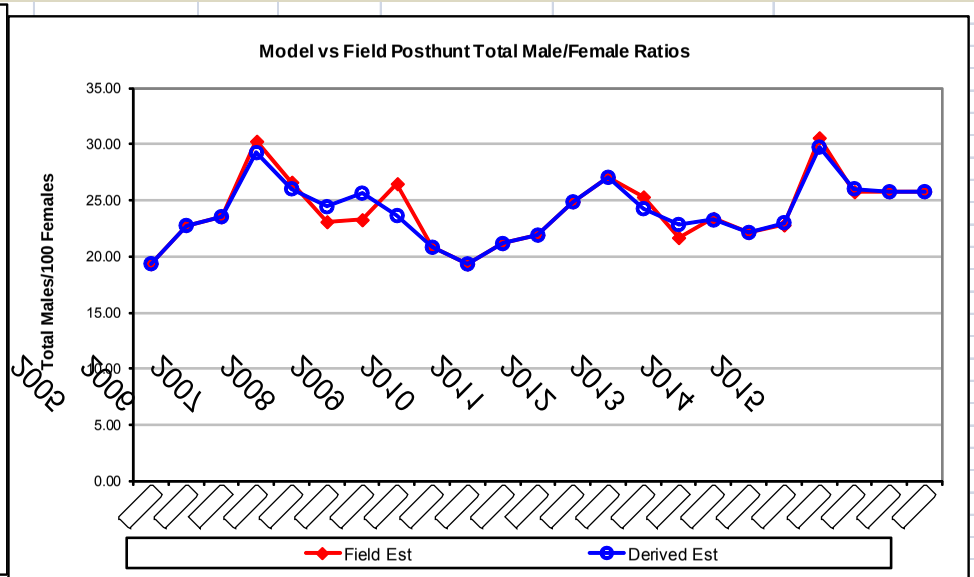
Parameters:	Optim cells
Adult Survival =	0.847
Initial Total Male Pop/10,000 =	0.182
Initial Female Pop/10,000 =	0.940

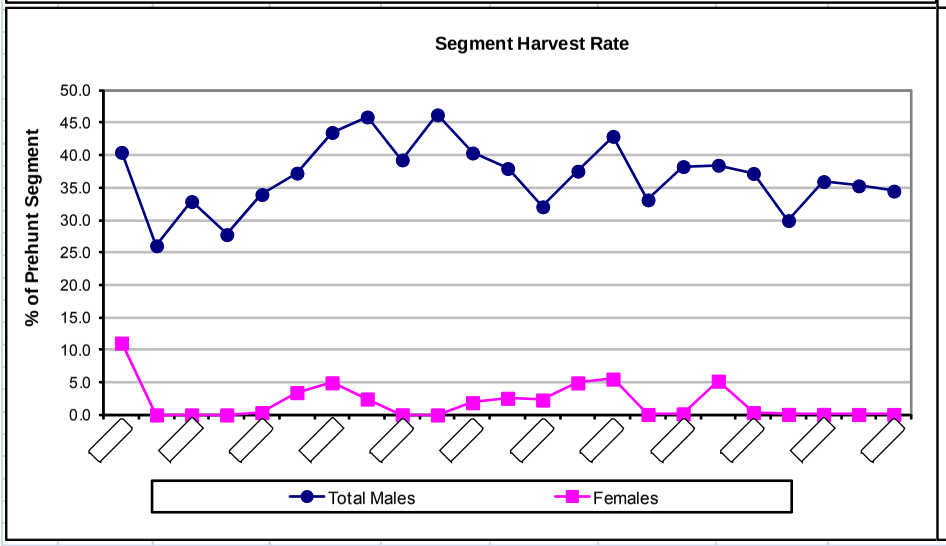
MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

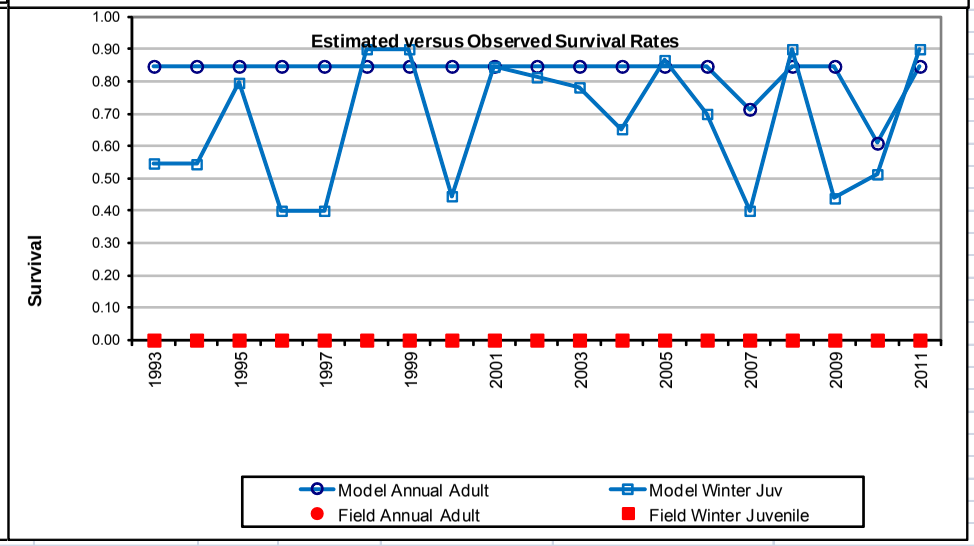
Year	Classification Counts										Harvest			
	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of			
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females		
1993		51.20	1.65	19.37	19.37	0.90	153	1125	1063	2341	40.5	11.1		
1994		59.08	2.01	22.77	22.77	1.09	0	677	0	677	26.1	0.0		
1995		60.71	2.11	23.55	23.56	1.15	0	981	0	981	32.9	0.0		
1996		69.99	2.32	29.26	30.28	1.34	0	1042	0	1042	27.8	0.0		
1997		78.65	2.84	26.04	26.64	1.39	0	1219	32	1251	34.0	0.4		
1998		62.01	2.39	24.44	23.11	1.27	12	1282	314	1608	37.3	3.4		
1999		55.82	2.07	25.65	23.29	1.19	70	1868	492	2430	43.5	4.9		
2000		61.75	2.29	23.66	26.50	1.33	33	2033	255	2321	45.9	2.5		
2001		47.44	1.39	20.83	20.84	0.83	0	1344	1	1345	39.3	0.0		
2002		49.45	1.77	19.35	19.35	0.99	0	1738	0	1738	46.2	0.0		
2003		43.83	1.67	21.17	21.16	1.07	19	1538	206	1763	40.4	1.9		
2004		56.03	1.67	21.92	21.92	0.92	19	1430	281	1730	38.0	2.6		
2005		54.30	1.51	24.88	24.88	0.92	40	1260	253	1553	32.1	2.3		
2006		53.06	1.70	27.06	27.07	1.11	29	1796	572	2397	37.6	4.9		
2007		53.63	1.55	24.27	25.33	0.96	37	1965	630	2632	42.9	5.5		
2008		44.54	1.51	22.86	21.70	0.97	3	1001	6	1010	33.1	0.1		
2009		63.64	2.13	23.26	23.41	1.12	2	1333	15	1350	38.3	0.2		
2010		53.81	2.09	22.15	22.15	1.20	47	1197	475	1719	38.5	5.2		
2011		63.53	2.25	23.02	22.83	1.17	0	878	23	901	37.2	0.4		
2012		77.58	2.94	29.76	30.59	1.58	4	927	6	937	29.9	0.1		
2013		53.91	1.97	26.04	25.79	1.23	5	1067	6	1078	36.0	0.1		
2014		53.91	1.97	25.78	25.79	1.23	4	1067	6	1077	35.3	0.1		
2015		53.91	1.97	25.79	25.79	1.23	10	1067	6	1083	34.5	0.1		

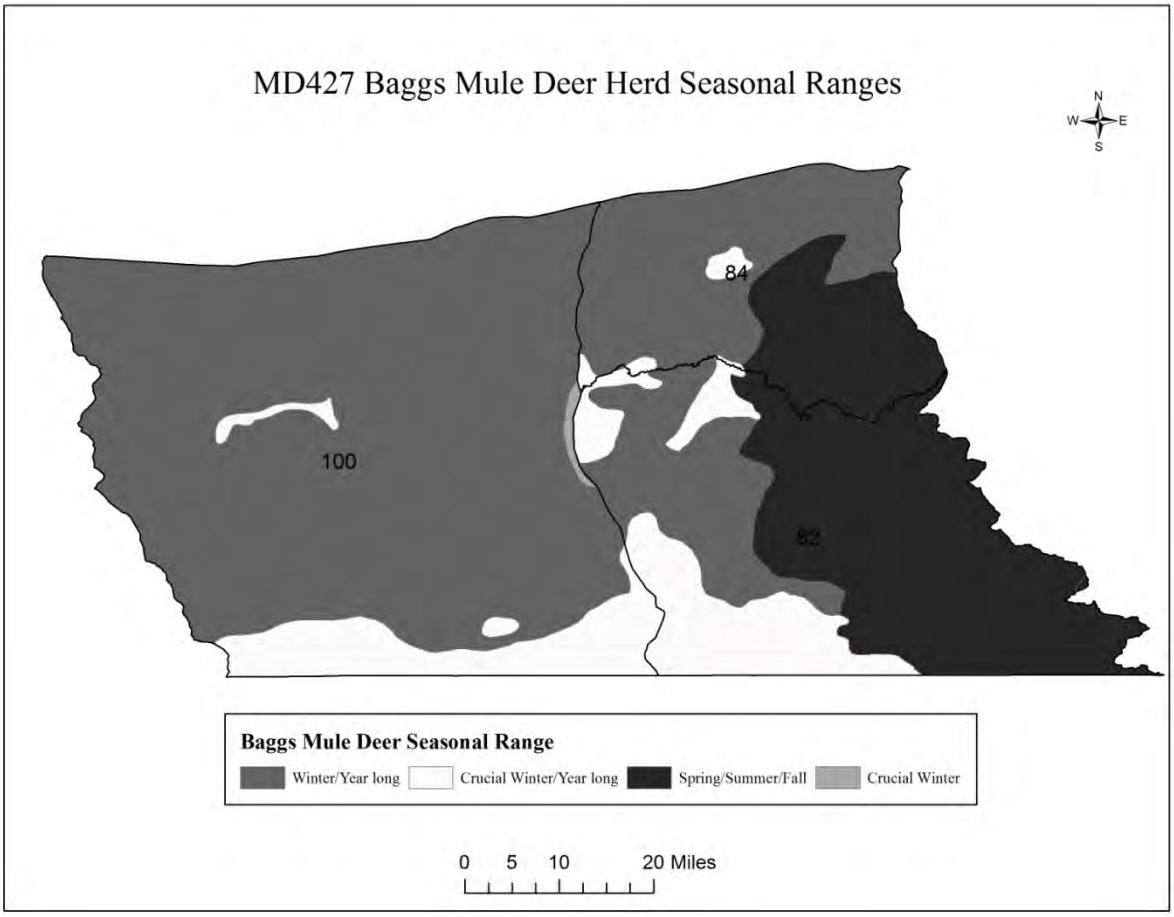
FIGURES


Posthunt Population Estimate
Estimated Posthunt Population
25000
20000
15000
10000
5000
0
1993
1994
1992
1996
1997
1998
1999
2000
2001
2005
2003
2004
Model Population Est
Total Classified
Objective


Model vs Field Posthunt Total Male/Female Ratios
Total Males/100 Females
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2002
2006
2007
2008
2009
2010
2011
2015
2013
2014
2012
Field Est
Derived Est


Segment Harvest Rate
% of Prehunt Segment
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
Total Males
Females


Estimated versus Observed Survival Rates
Survival
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
Model Annual Adult
Model Winter Juv
Field Annual Adult
Field Winter Juvenile


MD427 Baggs Mule Deer Herd Seasonal Ranges
N
W
E
S
84
100
92
Baggs Mule Deer Seasonal Range
Winter/Year long
Crucial Winter/Year long
Spring/Summer/Fall
Crucial Winter
0 5 10 20 Miles

2012 - JCR Evaluation Form

SPECIES: Mule Deer

PERIOD: 6/1/2012 - 5/31/2013

HERD: MD430 - STEAMBOAT

HUNT AREAS: 131

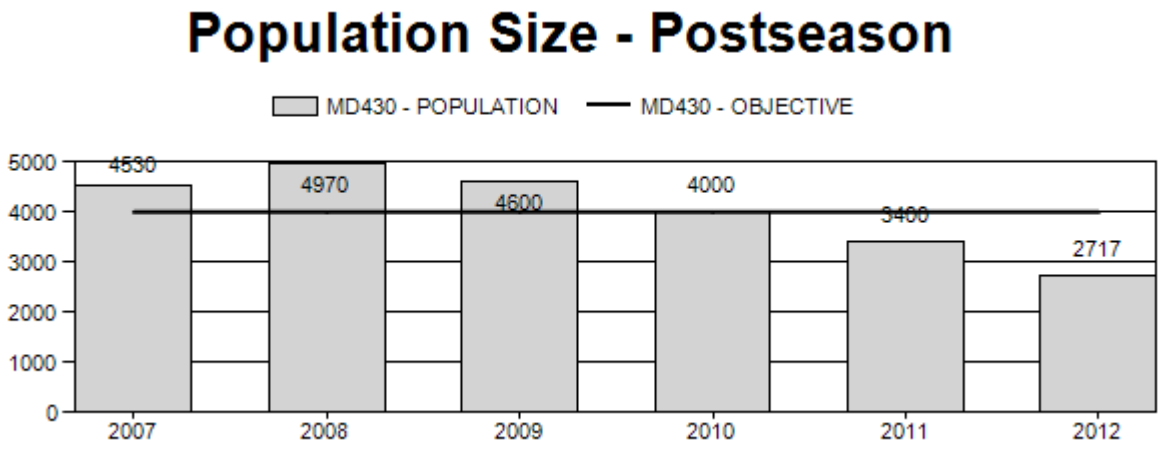
PREPARED BY: PATRICK BURKE

	2007 - 2011 Average	2012	2013 Proposed
Population:	4,300	2,717	2,741
Harvest:	459	242	232
Hunters:	1,276	854	850
Hunter Success:	36%	28%	27 %
Active Licenses:	1,342	870	860
Active License Percent:	34%	28%	27 %
Recreation Days:	4,790	2,794	2,600
Days Per Animal:	10.4	11.5	11.2
Males per 100 Females	21	19	
Juveniles per 100 Females	54	40	

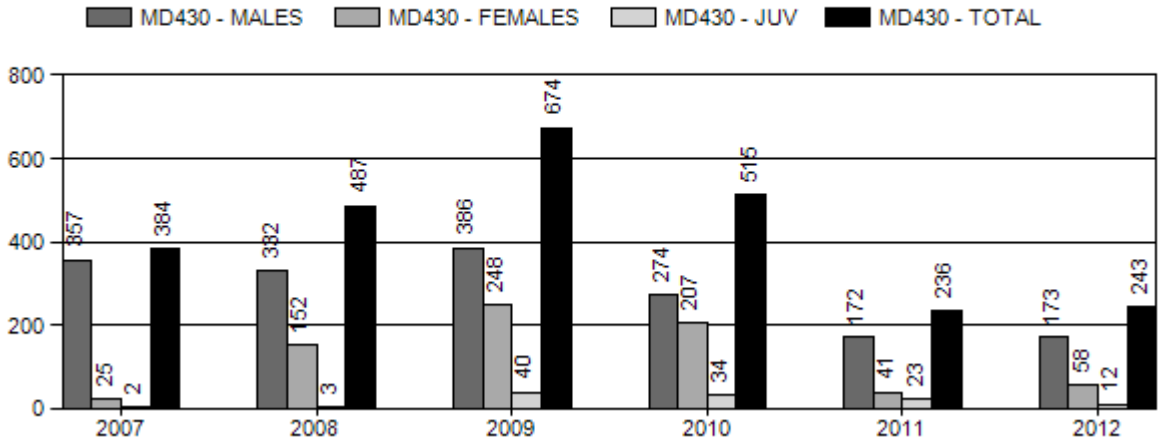
Population Objective:	4,000
Management Strategy:	Recreational
Percent population is above (+) or below (-) objective:	-32.1%
Number of years population has been + or - objective in recent trend:	4
Model Date:	2/19/2013

Proposed harvest rates (percent of pre-season estimate for each sex/age group):

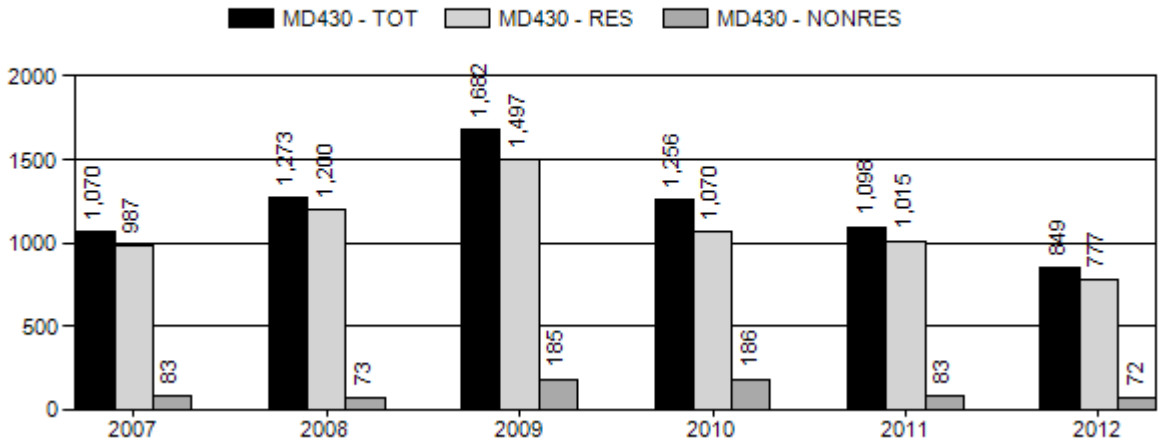
	JCR Year	Proposed
Females ≥ 1 year old:	1.0%	3.9%
Males ≥ 1 year old:	29.0%	34.1%
Juveniles (< 1 year old):	1.6%	1.5%
Total:	6.2%	7.7%
Proposed change in post-season population:	5.0%	0.9%



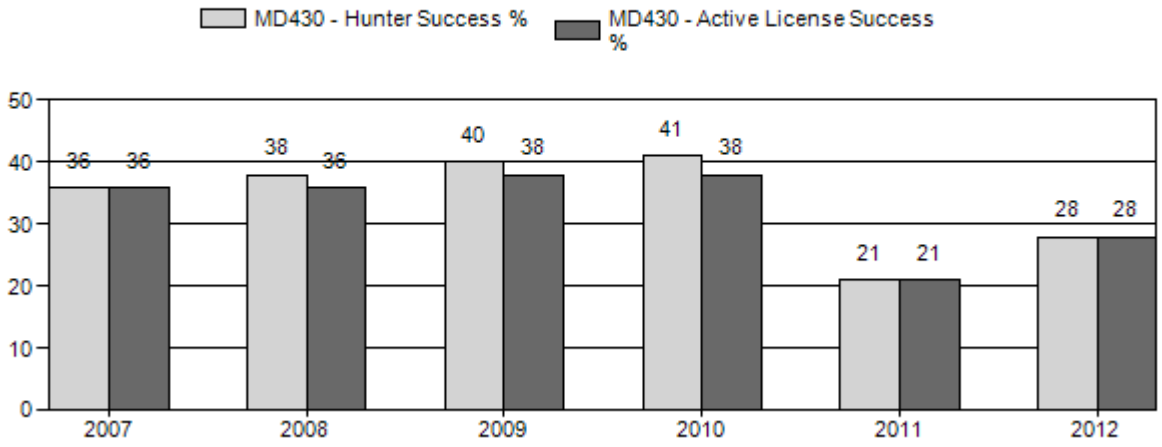
Harvest



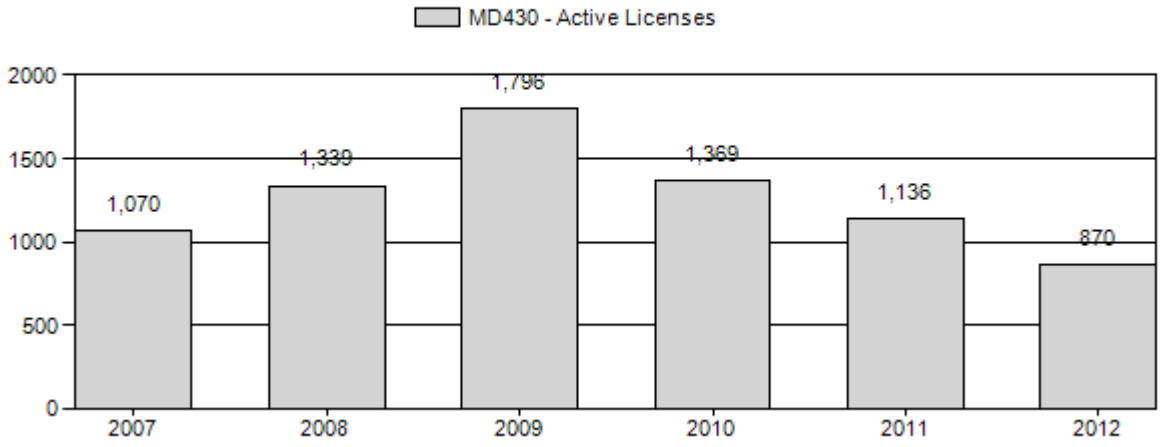
Number of Hunters



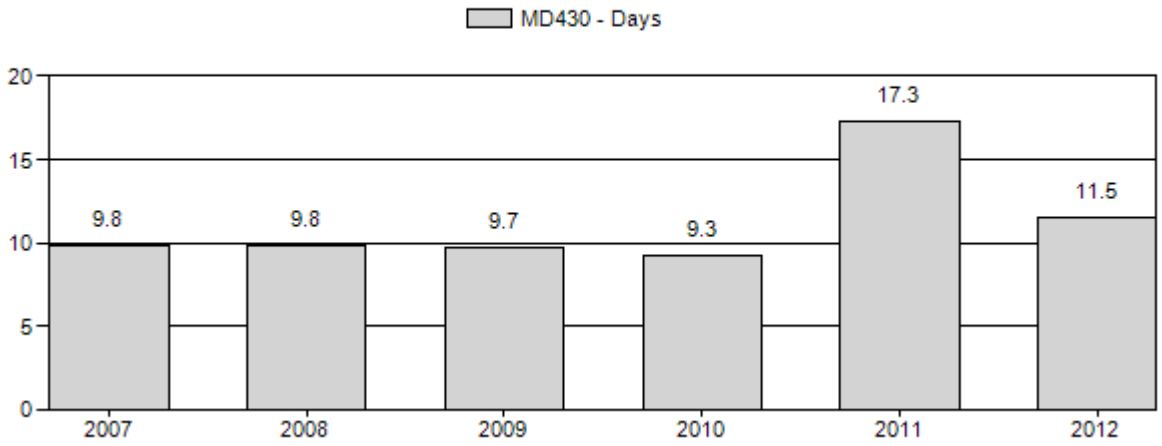
Harvest Success



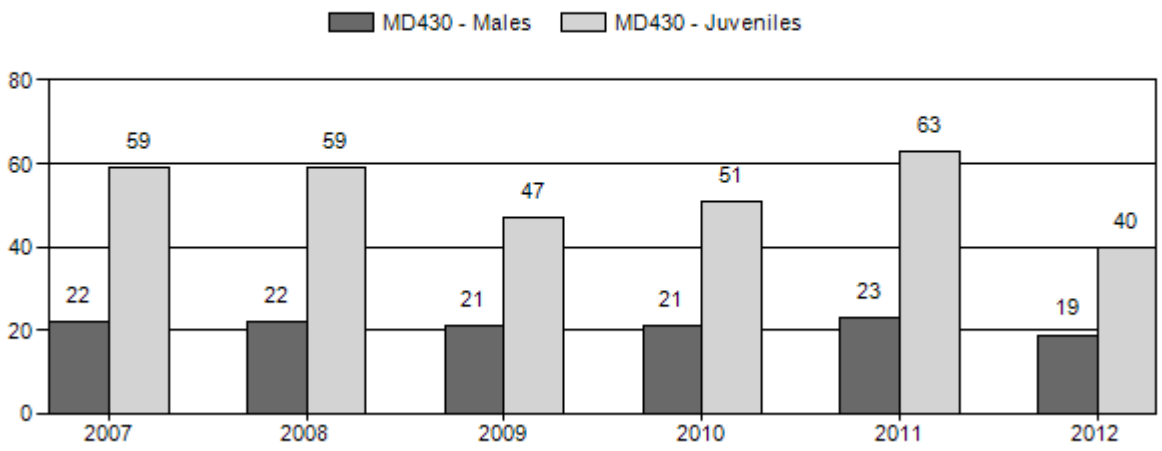
Active Licenses



Days per Animal Harvested



Postseason Animals per 100 Females



2007 - 2012 Postseason Classification Summary

for Mule Deer Herd MD430 - STEAMBOAT

		MALES				FEMALES		JUVENILES				Males to 100 Females				Young to		
Year	Post Pop	Ylg	Adult	Total	%	Total	%	Total	%	Tot Cls	Cls Obj	Yling	Adult	Total	Conf Int	100 Fem	Conf Int	100 Adult
2007	4,530	37	52	89	12%	410	55%	240	32%	739	1,318	9	13	22	± 0	59	± 0	48
2008	4,970	73	82	155	12%	717	55%	421	33%	1,293	934	10	11	22	± 0	59	± 0	48
2009	4,600	67	72	139	12%	663	60%	311	28%	1,113	903	10	11	21	± 0	47	± 0	39
2010	4,000	64	85	149	12%	723	58%	368	30%	1,240	701	9	12	21	± 2	51	± 3	42
2011	3,400	35	35	70	12%	310	54%	194	34%	574	761	11	11	23	± 3	63	± 7	51
2012	2,717	19	42	61	12%	323	63%	129	25%	513	0	6	13	19	± 3	40	± 5	34

2013 HUNTING SEASONS
STEAMBOAT MULE DEER HERD (MD430)

Hunt Area	Type	SEASON DATES Opens	Closes	Quota	Limitations
131	Gen	Oct. 1	Oct. 04		General license; antlered deer
		Oct. 1	Oct. 06		General youth license; any deer
	7	Oct. 1	Oct. 31	50	Limited quota; doe of fawn deer valid in that portion of Area 131 south of the Big Island Road (Sweetwater County Road 4) and west of the Blue Rim Road (Sweetwater County Road 5) and in that portion of Area 131 within the Farson-Eden Irrigation Project
Archery		Sept. 01	Sept. 30		Refer to license type and limitations in Section 3.

Hunt Area	Type	Quota change from 2012
Herd Unit Total		**None**

Management Evaluation
Current Management Objective: 4,000
Management Strategy: Recreational
2012 Postseason Population Estimate: ~2,700
2013 Proposed Population Estimate: ~2,700

The management objective for the Steamboat mule deer herd is 4,000 animals post-season under a recreational management scenario. The objective for this population was set in 1991.

Herd Unit Issues

The 2012 modeled post-season population estimate for this herd is roughly 2,700 deer with a declining trend since the population was estimated to be around 4,500 deer in 2007. The downward trend seen in this population can be attributed to three main causes. Increased doe harvest was initiated in 2009 and 2010 due to the population being over objective, which was

followed by severe winter conditions during the 2010-2011 winter, which resulted in approximately 40% mortality on collared adult does. Since that time, low fawn production largely caused by drought conditions in the herd unit has not allowed this population to rebound.

Weather

Deer wintering in the Leucite Hills area of the herd unit suffered severe winter mortality during the 2010-2011 winter. Based on data from GPS collars deployed by the BLM Rock Springs Field Office, adult doe deer wintering in the Leucite Hills experienced nearly 40% mortality during that winter. However, observed yearling buck to doe ratios were much higher than expected in the 2011 postseason classifications, which would indicate good overwinter survival, when collar data indicated otherwise. The most likely explanation for this is that because funds were not available for an aerial classification flight in 2011, a larger proportion of the classification sample came from the area near the Green River, which tends to have higher fawn production than the Leucite Hills portion of the herd and experienced milder winter conditions during the 2010-2011 winter. While the 2011-2012 winter was substantially milder than the previous winter, which allowed for better overwinter survival.

Habitat

No habitat transects targeting deer range were conducted within the Steamboat Herd Unit. However, the summer of 2012 was one of the driest summers on record in Wyoming. Since many of the deer in this herd summer at lower elevations than deer in other populations, the drought conditions during 2012 were felt especially strongly by this population. The low moisture levels during the fawn rearing portion of 2012 are probably the reason behind the extremely low fawn ratios seen in the 2012 classifications.

Field Data

Classifications on this herd were conducted with the aid of a helicopter during December 2012, when this herd was flown in conjunction with the Steamboat elk herd. The majority of deer observed during the classification flights were deer wintering in the Leucite Hills area north of the town of Superior. A total of 513 deer were classified from the air in 2012, this compares to an average of 1,215 deer classified each year when the herd was also sampled from the air between 2008 and 2010 with a similar effort expenditure. The resulting observed ratios from the 2012 classification efforts were 40 fawns per 100 does and 20 total bucks per 100 does, which included six yearling bucks per 100 does. The observed fawn to doe ratio of 40 fawns per 100 does in 2012 is the lowest ratio ever observed in this herd and is not sufficient for population maintenance and will not allow this population to grow towards its objective.

Harvest Data

The 2012 harvest was the second lowest recorded in recent history for this herd being only slightly better than the 2011 harvest. The harvest statistics of 28% harvest success and an average of 11.5 days per animal harvested while better than the statistics from the 2011 hunting season still suggest that the deer population in HA 131 is still recovering from the 2010-2011

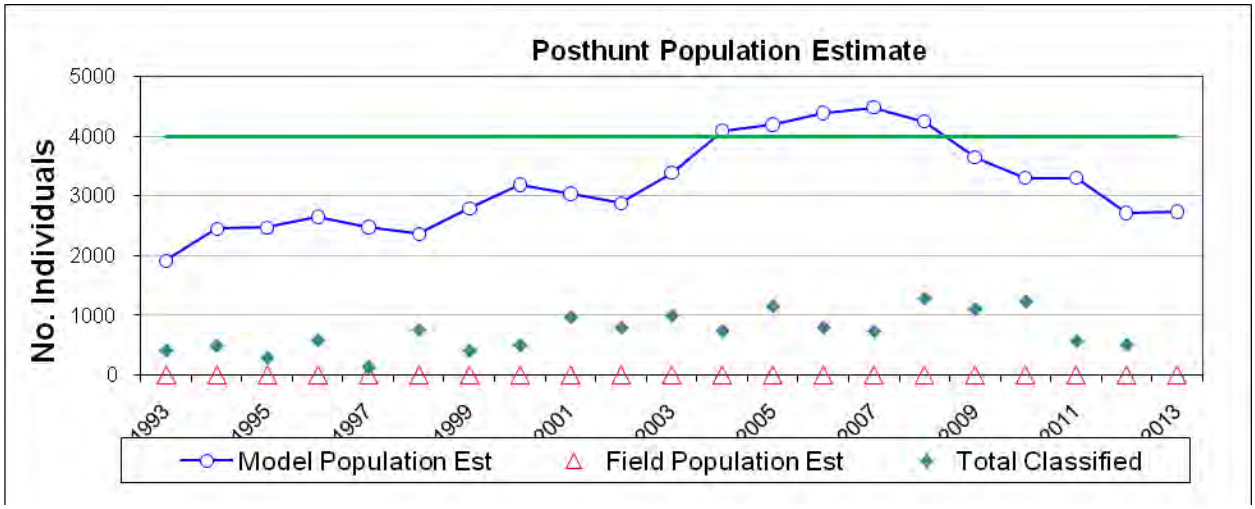
winter. These harvest statistics along with fawn recruitment data and collar data indicate that deer numbers in HA 131 are lower now than they were several years ago.

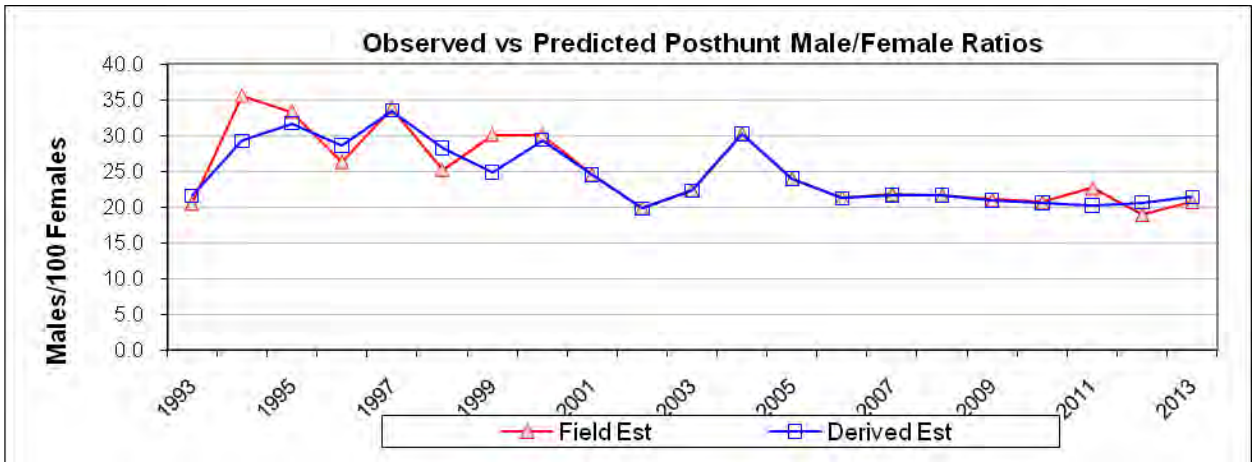
Population

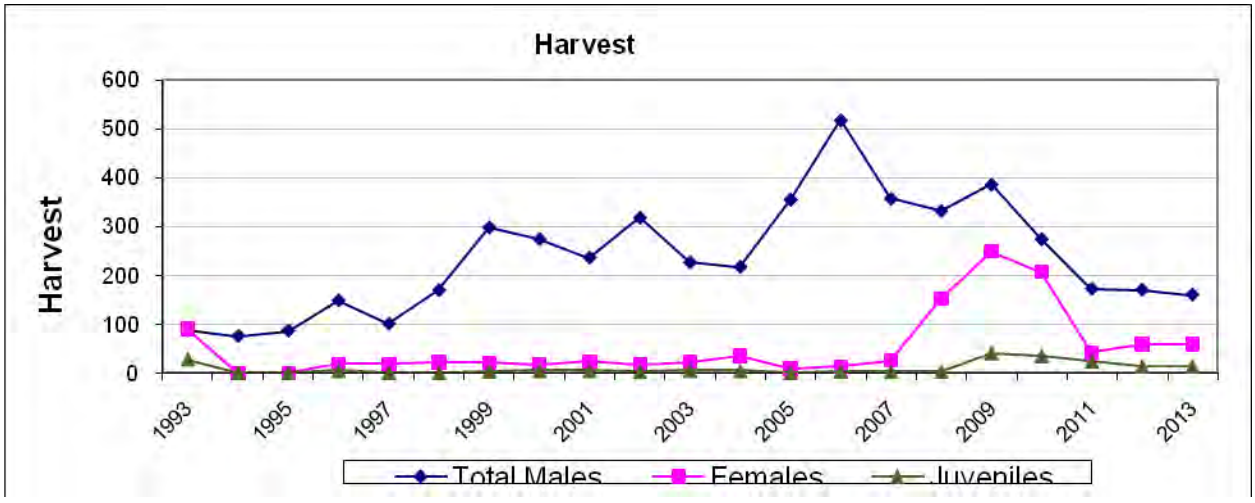
The model for the Steamboat herd tracks fairly well with observed data despite the fact that preliminary results from a GPS collar study suggest that roughly 1/3 of the deer wintering in the Leucite Hills are summering in the Sublette herd unit. The collars from that study are due to drop off during the summer of 2013, which will allow for a more detailed analysis of the movements between the Steamboat and Sublette deer herds. The time-specific juvenile survival model was used for this population since it seem to best match field observations.

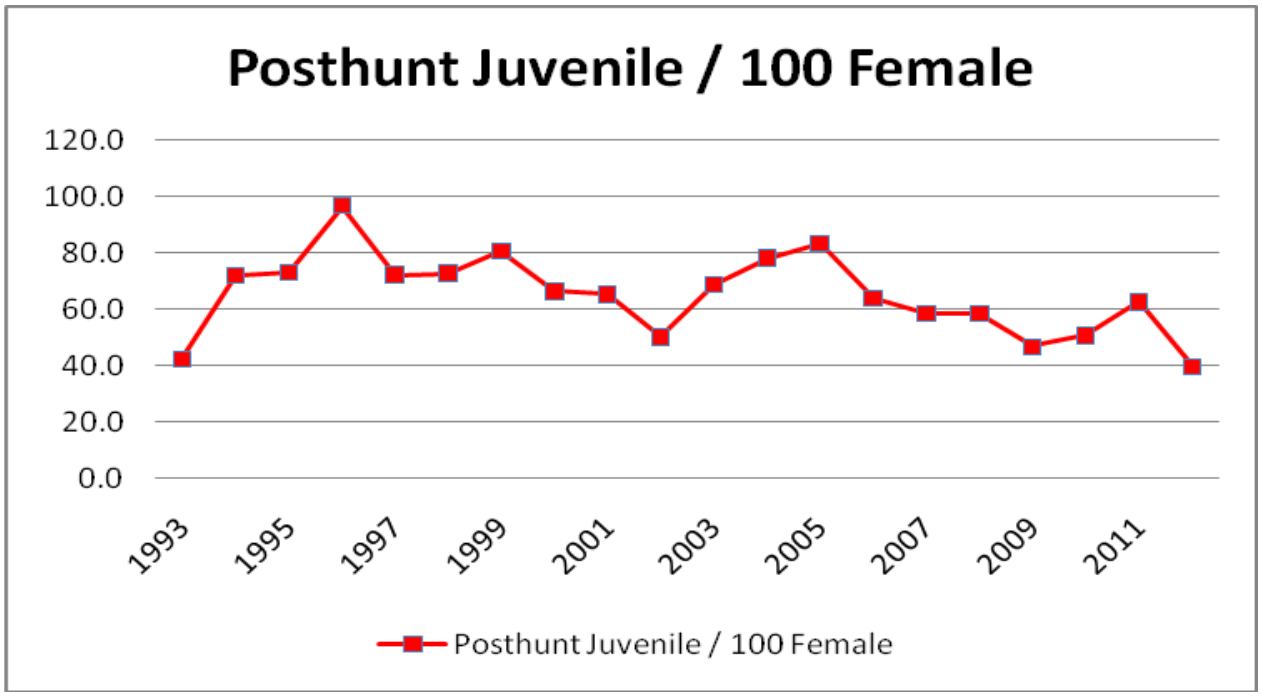
Management Summary

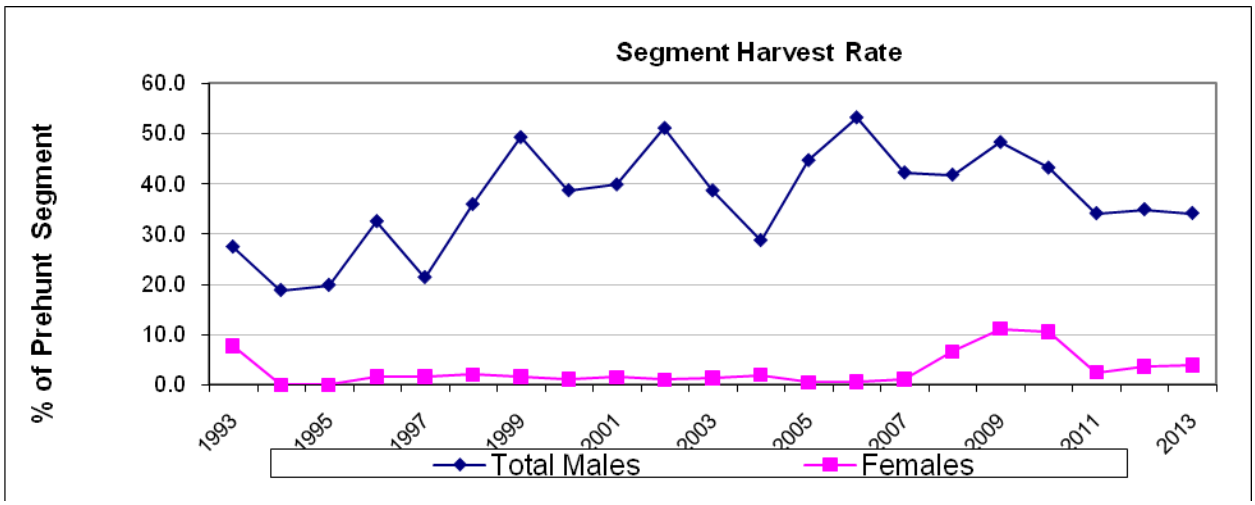
The 2013 season for the Steamboat deer herd maintains a conservative general season and a limited number of doe fawn licenses directed at agricultural areas within the hunt urea that are experiencing deer damage issues. The 2013 general season will run for four days starting on a Tuesday and ending on Friday. This is being done in response to low hunter success, high days per animal harvested and a lower deer population in HA 131 during the 2011 and 2012 hunting seasons. The general season also includes a six day youth season that will overlap the general season but will include the weekend. This is being done to allow youth hunters an opportunity to hunt without conflicting with school. In addition to the general season, the 2013 hunting season includes 50 Type 7 doe fawn licenses in areas where deer damage to private land is a concern, similar to the 2012 season.

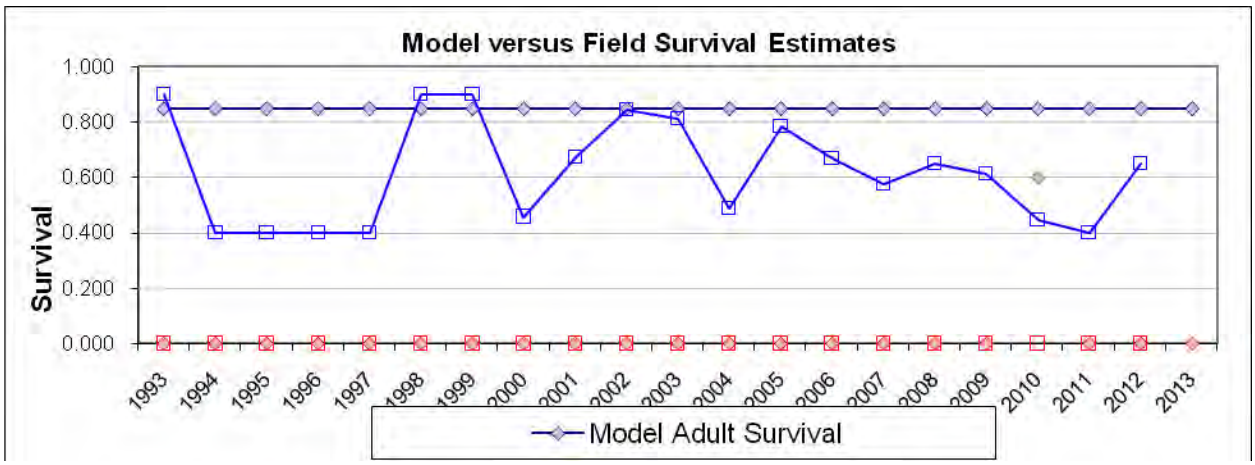

Posthunt Population Estimate
No. Individuals
5000
4000
3000
2000
1000
0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Model Population Est
Field Population Est
Total Classified

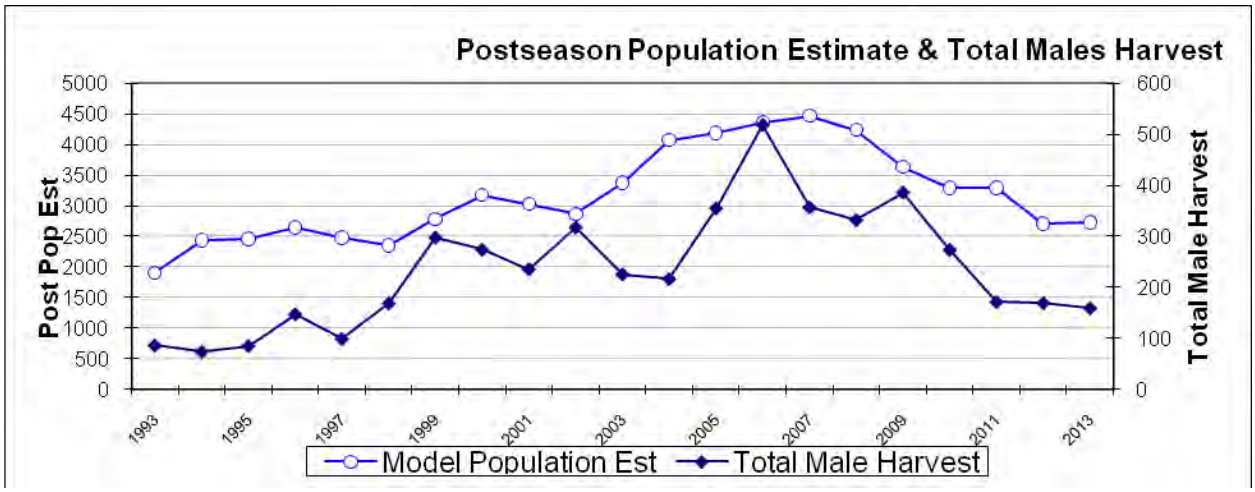

Observed vs Predicted Posthunt Male/Female Ratios
Males/100 Females
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Field Est
Derived Est


Harvest
Harvest
600
500
400
300
200
100
0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Total Males
Females
Juveniles


Posthunt Juvenile / 100 Female
120.0
100.0
80.0
60.0
40.0
20.0
0.0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
Posthunt Juvenile / 100 Female


Segment Harvest Rate
% of Prehunt Segment
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Total Males
Females


Model versus Field Survival Estimates
Survival
1.000
0.800
0.600
0.400
0.200
0.000
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Model Adult Survival


Postseason Population Estimate & Total Males Harvest
Post Pop Est
Total Male Harvest
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
600
500
400
300
200
100
0
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Model Population Est
Total Male Harvest

INPUT	
Species:	Deer
Biologist:	Patrick Burke
Herd Unit & No.:	MD430 Steamboat
Model date:	02/12/13

☐ Clear form

MODELS SUMMARY		Fit	Relative AICc	Check best model to create report
CJ,CA	Constant Juvenile & Adult Survival	56	65	☐ CJ,CA Model
SCJ,SCA	Semi-Constant Juvenile & Semi-Constant Adult Survival	312375	312384	☐ SCJ,SCA Mod
TSJ,CA	Time-Specific Juvenile & Constant Adult Survival	6	101	☑ TSJ,CA Model

Population Estimates from Top Model

Year	Posthunt Population Est.		Trend Count	Predicted Prehunt Population				Predicted Posthunt Population				Objective
	Field Est	Field SE		Juveniles	Total Males	Females	Total	Juveniles	Total Males	Females	Total	
1993				529	349	1270	2148	498	253	1171	1922	4000
1994				877	439	1217	2532	877	356	1217	2450	4000
1995				882	477	1207	2566	882	383	1207	2471	4000
1996				1144	501	1200	2844	1139	338	1180	2657	4000
1997				874	514	1228	2616	874	404	1208	2487	4000
1998				855	518	1199	2571	855	332	1175	2361	4000
1999				1099	666	1381	3145	1095	338	1359	2792	4000
2000				1084	779	1645	3509	1080	478	1626	3184	4000
2001				1050	652	1625	3327	1046	392	1600	3038	4000
2002				853	685	1709	3248	851	335	1692	2878	4000
2003				1224	644	1793	3662	1219	395	1769	3383	4000
2004				1534	830	1995	4360	1529	592	1957	4078	4000
2005				1686	875	2032	4593	1686	484	2022	4192	4000
2006				1515	1072	2376	4962	1511	502	2363	4376	4000
2007				1454	931	2508	4893	1452	538	2480	4470	4000
2008				1385	874	2521	4781	1382	509	2354	4245	4000
2009				1062	880	2444	4386	1018	455	2171	3645	4000
2010				1017	698	2153	3868	980	397	1925	3302	4000
2011				1155	555	1851	3561	1130	366	1806	3301	4000
2012				690	536	1757	2983	676	349	1692	2717	4000
2013				827	516	1654	2997	813	340	1589	2741	4000
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												

Survival and Initial Population Estimates

Year	Annual Juvenile Survival Rates			Annual Adult Survival Rates		
	Model Est	Field Est	SE	Model Est	Field Est	SE
1993	0.90			0.85		
1994	0.40			0.85		
1995	0.40			0.85		
1996	0.40			0.85		
1997	0.40			0.85		
1998	0.90			0.85		
1999	0.90			0.85		
2000	0.46			0.85		
2001	0.67			0.85		
2002	0.84			0.85		
2003	0.81			0.85		
2004	0.49			0.85		
2005	0.78			0.85		
2006	0.67			0.85		
2007	0.58			0.85		
2008	0.65			0.85		
2009	0.61			0.85		
2010	0.45			0.85	0.60	
2011	0.40			0.85		
2012	0.65			0.85		
2013	0.70			0.85		
2014	0.00					
2015	0.00					
2016	0.00					
2017	0.00					
2018	0.00					
2019	0.00					
2020	0.00					
2021	0.00					
2022	0.00					
2023	0.00					
2024	0.00					
2025	0.00					

Parameters:	Optim cells
Adult Survival =	0.848
Initial Total Male Pop/10,000 =	0.025
Initial Female Pop/10,000 =	0.117

MODEL ASSUMPTIONS	
Sex Ratio (% Males) =	50%
Wounding Loss (total males) =	10%
Wounding Loss (females) =	10%
Wounding Loss (juveniles) =	10%

Classification Counts											Harvest	
Year	Juvenile/Female Ratio			Total Male/Female Ratio							Segment Harvest Rate (% of	
	Derived Est	Field Est	Field SE	Derived Est	Field Est w/o bull adj	Field SE	Juv	Males	Females	Total Harvest	Total Males	Females
1993		42.52	4.88	21.60	20.47	3.12	28	87	90	205	27.5	7.8
1994		72.03	7.25	29.25	35.59	4.52	0	75	0	75	18.8	0.0
1995		73.05	9.47	31.69	33.33	5.61	0	86	0	86	19.8	0.0
1996		96.56	8.51	28.64	26.34	3.56	4	148	18	170	32.5	1.7
1997		72.31	13.84	33.46	33.85	8.35	0	100	18	118	21.4	1.6
1998		72.73	5.71	28.23	25.19	2.86	0	169	22	191	35.9	2.0
1999		80.61	8.62	24.87	30.10	4.47	3	298	20	321	49.2	1.6
2000		66.41	6.57	29.40	30.08	3.91	4	274	17	295	38.7	1.1
2001		65.37	4.59	24.52	24.51	2.44	4	236	23	263	39.8	1.6
2002		50.32	4.02	19.83	19.83	2.25	2	318	16	336	51.0	1.0
2003		68.89	4.71	22.33	22.33	2.28	5	226	22	253	38.6	1.3
2004		78.15	6.24	30.24	30.25	3.32	4	217	35	256	28.7	1.9
2005		83.39	5.23	23.94	23.93	2.30	0	355	9	364	44.7	0.5
2006		63.97	4.92	21.25	21.25	2.44	3	518	12	533	53.2	0.6
2007		58.54	4.76	21.69	21.71	2.54	2	357	25	384	42.2	1.1
2008		58.72	3.61	21.63	21.62	1.91	3	332	152	487	41.8	6.6
2009		46.91	3.22	20.97	20.97	1.96	40	386	248	674	48.3	11.2
2010		50.90	3.26	20.61	20.61	1.85	34	274	207	515	43.2	10.6
2011		62.58	5.73	20.25	22.58	2.99	23	172	41	236	34.1	2.4
2012		39.94	4.16	20.63	18.89	2.64	13	170	59	242	34.9	3.7
2013		51.14	4.38	21.37	20.69	2.49	13	160	59	232	34.1	3.9
2014												
2015												
2016												
2017												
2018												
2019												
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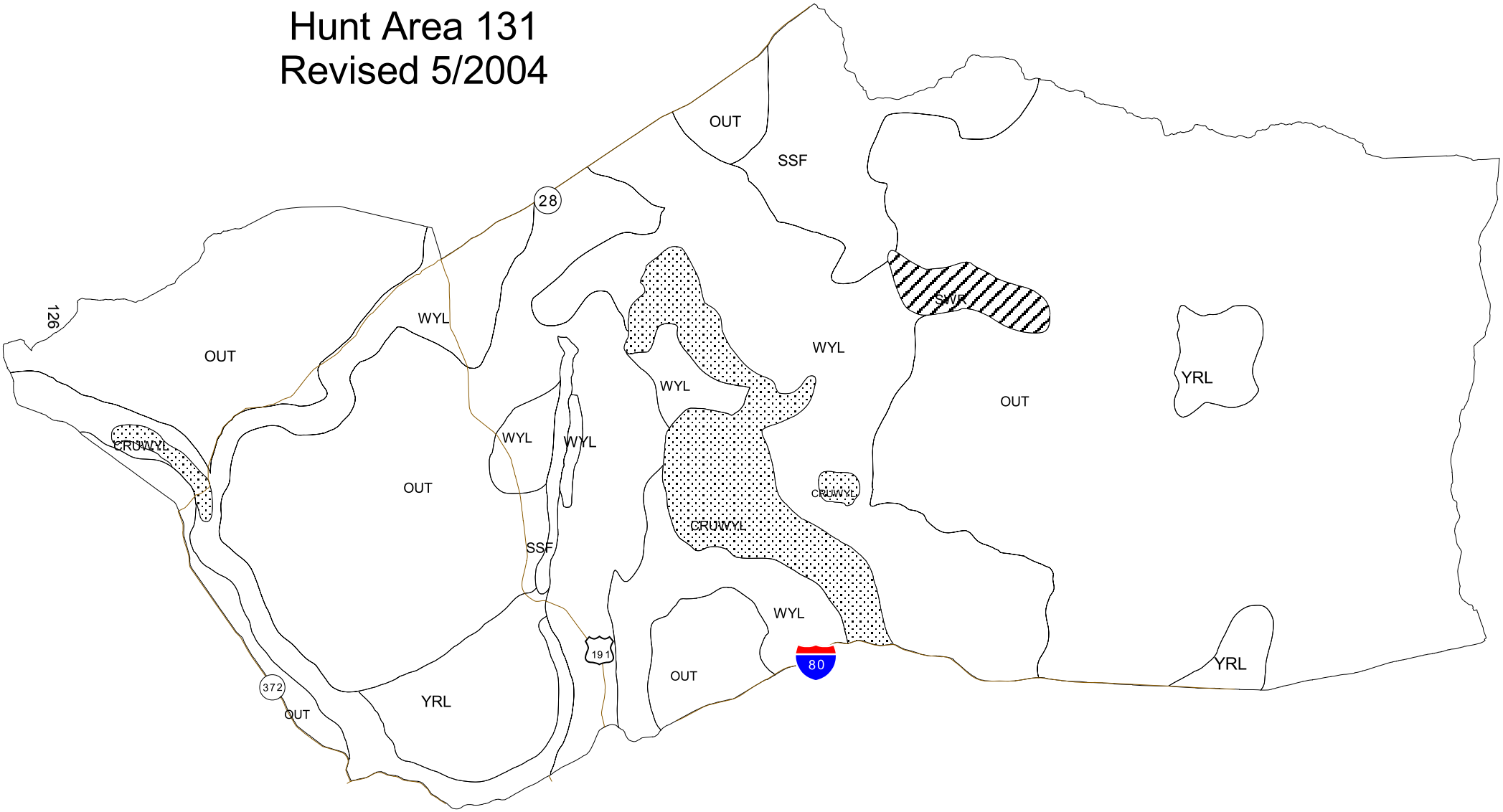
2021												
2022												
2023												
2024												
2025												

Deer - Steamboat
Herd 430
Hunt Area 131
Revised 5/2004